

THE
NEW CYCLOPEDIA



OR
FAMILY MEDICINE



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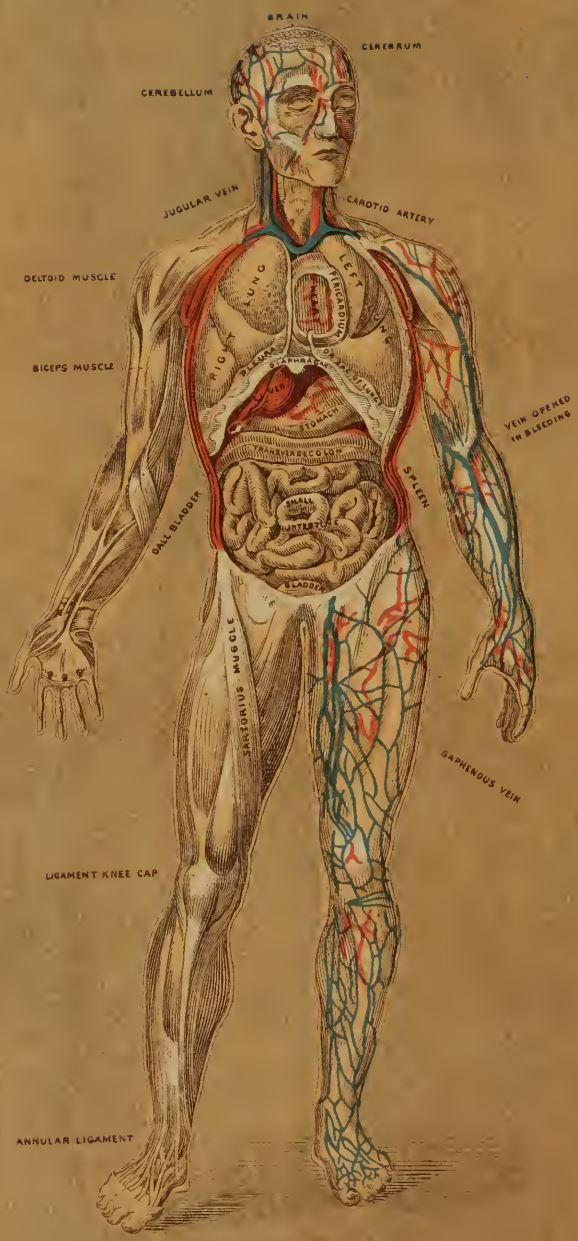
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THE NEW
ENCYCLOPEDIA OF FAMILY MEDICINE
FOR HOME PHYSICIANS



THE GOOD SANITARY
IN EVERY FAMILY

BY DR. H. M. HARRIS, M.D., F.R.C.P.

AND OTHERS.

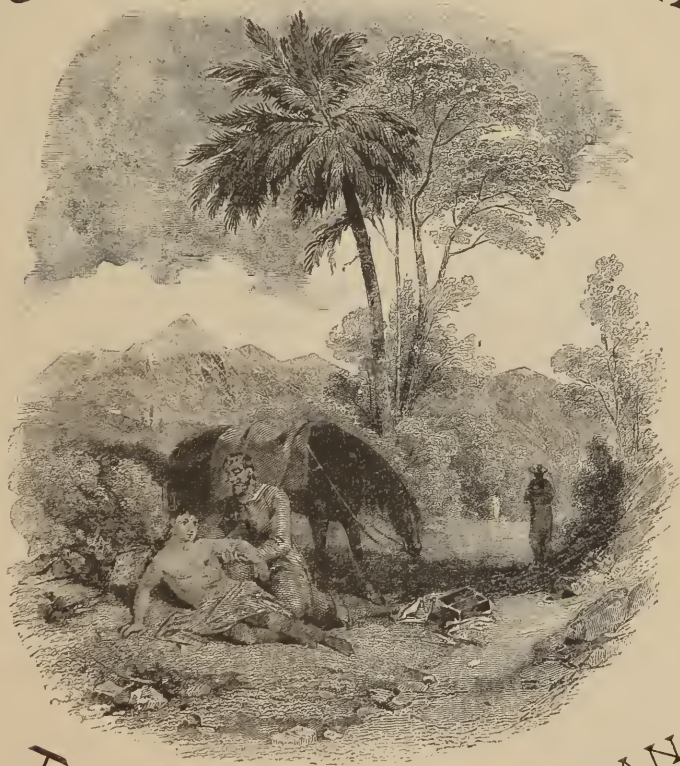
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FIGURE OF THE INTERIOR OF THE
LIVER OF A HUMAN BEING

THE NEW
CYCLOPEDIA OF FAMILY MEDICINE.

OUR HOME PHYSICIAN



THE GOOD SAMARITAN
IN EVERY FAMILY.

BY GEO. M. BEARD, A. M., M. D.,

AND OTHERS, ILLUSTRATED.

NEW YORK: E. B. TREAT.

THE NEW CYCLOPÆDIA OF FAMILY MEDICINE.
OUR
HOME PHYSICIAN:

A Popular Guide

TO THE

ART OF PRESERVING HEALTH AND TREATING DISEASE;

WITH PLAIN ADVICE FOR ALL THE

MEDICAL AND SURGICAL EMERGENCIES OF THE FAMILY.

CONTAINING CLEAR DESCRIPTIONS OF THE

Structure and Functions of the Human Body; the Influence of Occupation on Health and Longevity; the Laws of Inheritance; with new and original chapters on Diet, Stimulants and Narcotics, Air, Sunlight, Exercise, Climate, Electricity, and Nervous Diseases of modern times; and full directions for the care of the Sick, and the management of Infants and Children; with a general description of recent Medical Discoveries and Improvements; and all possible self-aids for the Treatment of Accidents and Disease, in plain language adapted to the wants of the Household, and for those who are beyond the ready call of a Physician.

BASED ON THE MOST RECENT AND THE HIGHEST AUTHORITIES IN THE SEVERAL DEPARTMENTS, AND BROUGHT DOWN TO THE LATEST DATES.

BY

GEORGE M. BEARD, A.M., M.D.,

Formerly Lecturer on Nervous Diseases in the University of the City of New York; Fellow of the New York Academy of Medicine; Member of the New York and Kings Counties Medical Societies; of the American Medical Association; of the American Neurological Association; Author of "Irry Fever," "Stimulants and Narcotics," "Eating and Drinking," "A New Theory of Trance;" one of the Authors of "Medical and Surgical Electricity," etc.

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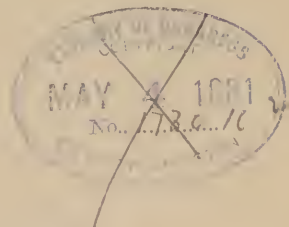
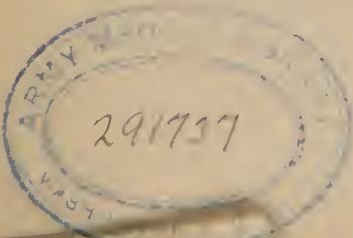
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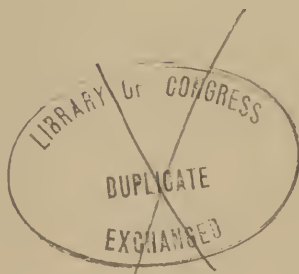
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PREFACE.

THE objects of this book are :

1. *To prevent disease*, by presenting in a popular form information concerning the laws of health.

2. *To shorten disease*, by enforcing the necessity and the duty of taking bad symptoms in time, and stopping the beginnings of evil.

3. *To diminish the evil and fatal effects of disease*, by giving plain advice for all the medical and surgical emergencies of the family, and simple rules for arresting and controlling disease for those who are beyond the ready call of a physician. Its purpose, therefore, is not so much to enable its readers to dispense with a *physician*, as to teach them how to dispense with *disease*.

4. *To give popular information concerning the progress of medical science*, by briefly describing and illustrating the recent inventions, discoveries, and improvements by means of which physicians are now enabled to study and to treat disease so much more satisfactorily and successfully than in former times. Although many of the instruments and appliances that are represented cannot, of course, be used by my readers, and may indeed never be seen by them, yet a general knowledge of their nature and uses cannot fail to be both interesting and valuable to the afflicted of every class, and should have the effect to convince the most sceptical that a profession which has done so much and so nobly for humanity is worthy of the highest respect and most fervent gratitude.

What is here said concerning the structure of the human body and the functions of its organs; on diet, stimulants, narcotics, air, sunlight, exercise, bathing; on the care of the sick-room, the management of infants and children; on the general laws and history of disease; and on the treatment of accidents and emergencies, and descriptions of familiar remedies,—is *designed for all persons and for every household*.

What is here said concerning the special care and treatment of obscure and grave diseases, and the application of powerful remedies, is designed chiefly for those who, like planters, miners, sailors, travellers, and dwellers in remote districts and on the plains,

are beyond the reach of skilful medical aid, and must either be treated by themselves or by their friends, or left to suffer, and perhaps to die.

The work, as now arranged, *not only includes all that has ever been attempted in similar works*, but also *several hundred new subjects in the department of health that have never before been mentioned in any or all of the popular treatises on medical science that have yet appeared*. I have sought to mention and describe every recent medical discovery and improvement that can possibly be of any service to my readers. I have endeavored throughout the work to keep in mind that I was writing for the great masses of the people, who know little or nothing of medical language. Therefore I have aimed to make the descriptions brief, clear, and elementary. There are many methods of studying disease, many hard terms which would only bewilder the general reader, though they are very familiar to physicians. Of such I make no mention.

My aim has also been to make the work so clear that the wayfarer might not err therein, and yet so thorough and exhaustive that the educated physician should find in it much to perfect his knowledge and refresh his memory.

It will be seen that the types, phases, and names of diseases have changed wonderfully during the past twenty-five years. We now have less of fevers and inflammation, and more of dyspepsia, neuralgia, hysteria, hypochondria, and other forms of nervous disease.

In our method of treatment, a greater revolution has been wrought than in the types of disease. Instead of bleeding and calomel, tartar-emetie and low diet, we now give *tonics and stimulants—iron and quinine, strychnine and arsenic, cod-liver oil and whiskey, air and sunlight, passive movements, general electrization, abundance of sleep, and a large and palatable variety of nourishing food*.

The result of all this scientific progress is, that we are much more successful in the treatment of diseases than formerly. Consumption is now much oftener held in check, relieved, and cured than it was twenty-five years ago. Statistics now show that it is much less frequently fatal under the new system of treatment than under the old. *Catarrh of the nose and larynx (rhinitis, pharyngitis, and laryngitis), dyspepsia, neuralgia, hysteria, hypochondria, insanity, the special diseases of women, affections of the eye, the ear, and the skin*—all of which were until recently ignored and neglected by the profession—are now treated with signal success. Among the new remedies and methods of treatment that have been found most

successful, I may here mention *bromide of potassium, carbolic acid, the sulphites and hypophosphites of soda, pepsin, cod-liver oil, strychnine, Swedish movements, general and localized electrization, podophyllin, pyrophosphate of iron, veratrum viride, nitrous oxide, oxygen, phosphorus, glycerine, chlorate of potash.*

This work is intended to be a *compend of the whole of the popular medical science of our time*, so far as it can be interesting or useful to my readers. Under Anatomy are presented those general facts in regard to the structure of the body, that every one, young and old, should be acquainted with. Under Physiology there are introduced many recent experiments and researches in this most fascinating branch of science. Under Hygiene are given in detail important rules for the care of the health and the art of prolonging life. This is a subject of the highest importance, and one to which I call the special attention of my readers. The large portion of the book devoted to the care of the health will be found to contain new, reliable, and interesting facts, many of which have never before been published. The facts and views that I present on the subject of *Food, Stimulants and Narcotics, Exercise, Sleep, Laws of Inheritance, Influence of Occupation on Health and Longevity, Man compared with other Animals*, certain of the nervous diseases, will probably take most of my readers by surprise. This surprise will be all the greater because the people have usually obtained their instruction on these matters from bad or ignorant men, who knew nothing whatever of science. I have tried also to present this department of hygiene in a somewhat attractive and interesting style, so that every one into whose hands the books may fall will read them *first*, even though all other sections are neglected.

In speaking of the various Accidents, Diseases, and Remedies, the aim has been to be brief, clear, direct, and explicit; to introduce nothing that would mislead, to omit nothing that can be of practical service to any one. I have tried to draw the lines beyond which patients should never attempt to cross, and have pointed out those conditions in which patients should never allow themselves to be treated by themselves or their friends, and should consult the best medical advice or none at all.

It will be seen that a large number of diseases which the masses of the people suppose to be incurable are now, under our modern systems of treatment and in skilful hands, susceptible of relief and of cure. All over the land there are thousands of cases of cataract that a skilful oculist might operate on with success; thousands of cases of deafness which, if taken in time, might be wholly or partially cured; thousands of cases of dyspepsia, neuralgia, paralysis,

and other nameless forms of chronic nervous diseases, that, if they only knew where to go, without falling into the hands of the phillistines, might be permanently relieved. All about us there are aching heads, weary nerves, that cry bitterly for relief and know not where to find it. This knowledge of the best way to consult a physician, and the best means of treatment, especially for diseases that have been regarded as incurable, I endeavor here to supply.

There are yet among the people those who have a blind faith in some one school or exclusive system of treatment. *To all such, let me say that the wise physician of our time uses for his patients all things that have been proved to be beneficial. On this principle this work is based.* The best physicians of our day are not narrow or bigoted, as some suppose, but are on the whole more liberal and progressive than almost any other class in society.

I undertake the enterprise with a full appreciation of the responsibilities of my position as a pioneer. Accordingly, I have left no stone unturned to make the work fully represent the best and most recent opinions and experience of the leading authorities of our time in the various departments.

This book, as now completed, is the work of so many hands, that I might perhaps be more properly called its editor than its author. Of the "*Domestic Medicine*" prepared by Inmray and other able writers, on which the work is based, I have taken of the general descriptions, especially in the department of Anatomy, such portions as in their very nature cannot be very progressive, and are therefore of permanent application.

I have been assisted in the department of the *Eye and Ear*, by Prof. D. B. St. John Roosa; in *Surgical Accidents and Emergencies*, by Prof. Benjamin Howard; in *Obstetrics and the Diseases of Women*, by an eminent physician. In the general revision of the work and correction of the proofs I have received indispensable assistance from my professional associate, Dr. A. D. Rockwell.

In collecting *Vital Statistics* I have at various times received invaluable suggestions from those eminent hygienists, Dr. Edward Jarvis and Dr. Elisha Harris, Registrar of Vital Statistics of the New York Metropolitan Board of Health.

In the *sanitary department* I have had the benefit of the experience of the well-known sanitarian, Dr. John H. Griscom.

To each and all of these gentlemen I desire to express my warmest acknowledgments, not alone for special assistance, but for general encouragement in my labors.

I have quoted extensively from my translation of *Tobold's Chronic Diseases of the Larynx*, from my works on *The Brain and*

Brain-Workers and *Hygiene for Students*, both of which are now being prepared for early publication; and also from a work on *General and Localized Electrization*, by Dr. A. D. Rockwell and myself, which is now in press. To Messrs. Tiemann & Co. my thanks are due for courtesy and promptness in furnishing a number of the cuts of instruments with which the work is illustrated.

I have consulted and freely quoted the standard works in the special departments of medical science that have appeared during the last few years. A partial list of the more prominent of these writers, with the titles of their books, will be found under a separate heading.

The task that is here undertaken is one of unusual difficulty and delicacy. To prepare a comprehensive popular treatise on the recondite science of medicine that shall say just enough to instruct, and not so much as to bewilder; that shall fairly represent the various departments in language both clear and attractive, as well as accurate and instructive; that shall make broad and plain the boundaries between those subjects which the people can and should know, and those which they should not attempt to know; that shall treat all this large variety of themes in such manner as not to offend the taste of the best-ordered household,—this is probably the severest test to which a scientific writer can possibly be brought.

In the absence of any respectable model, I have been compelled to proceed without guide or precedent, and to create my own ideal. Accordingly, it has been my aim to write here in the pages of this book just what I say every day in my office to my patients; just what I have been accustomed to teach in my popular essays and in my lectures before schools and lycæms; just what the family physician would tell his patients if he had the time and strength to give instruction in science to the families under his charge.

G. M. B.

PREFACE TO REVISED EDITION.

THE preparation of this work was, in the first instance, an experiment for which there had been, in this country, no satisfactory precedent. It was undertaken only after repeated solicitation and careful deliberation. It was a question how far the popularization of medical science could be carried. The reception that has been accorded to the former editions, not by the people only, but by the medical press and by the profession in all parts of the country, has encouraged the author to believe that the experiment has not been entirely unsuccessful, and that the work supplies a legitimate want. It is especially a gratification to learn, from various sources, that the portion of the volume devoted to Hygiene has not been neglected, but has been the means of correcting serious and wide-spread errors.

In these days medical science and art advance rapidly, and a work of this kind that is not occasionally revised, soon falls behind the times and fails to represent what even the people ought to know of these subjects.

Since the publication of the first edition, a number of new and important remedies have been introduced, old remedies have been applied differently from before, and in the departments of Physiology and Hygiene, certain points have been gained and novel theories broached, with which all intelligent people everywhere should have, at least, a general acquaintance.

Those who have no confidence in medicine, and are disposed to regard physicians as the only non-progressive class in society, are reminded that during the last ten years, *hydrate of chloral*, *bromohydric acid*, *caffein*, *iodoform*, *guarana*, *gelsemen*, *nitrite of amyl*, *sabicylic acid*, *jaborandi*, *bromide of camphor*, and other *bromides*, *apiol*, *apormorphia*, *chinoidin*, *phloridzin*, *coca*, *Culabar bean*, *grindelia*, *viburnum*, *inglurin*, *koumiss*, *trimethy lamine*, *duboisin*, *salicin*, *cotoin*, *damiana*, and other potent drugs, have come into general use, while the art of electro-therapeutics in the various methods of application to medicine and surgery, triumphing over a century of opposition, has developed far beyond the dream of its most enthusiastic pioneers and advocates. In the department of Diseases of the Nervous System

especially, the progress made during the last decade has been of a most radical and satisfactory nature; the symptoms, the hygiene, and the treatment of all affections of this class having been studied with greater thoroughness and success than at any previous epoch in the history of medicine. Very many of these diseases, formerly neglected, and endured as necessary evils, are now found to be not only relievable but curable. Some of the advances made in the department of nervous diseases will be found in the sections devoted to *Alcoholism*, *Inebriety*, *Neurasthenia* (*Nervous Exhaustion*), *Musicians' Cramp*, *Telegraphers' Cramp*, *Locomotor Ataxy*, *Neuralgia*, *Paralysis*, *Spinal Congestion*, *Hay Fever* and *Writers' Cramp*, *Massage*, *Mental Therapeutics*, *Hystero-Epilepsy*, *Opio-Mania*, *Sunstroke*, *Trance*, and *Insomnia*. These advances are explained, so far as is consistent with the plan of this work in the present edition. In this, as in the previous editions, I have described many remedies and modes of treatment that the people are not expected to use, save, perhaps, in absolute emergencies, but in regard to which all intelligent persons properly desire to have, at least, a general acquaintance. The Department of the Eye and Ear was revised by Dr. D. B. St. John Roosa; and that of Diseases of Women and Children by an eminent physician in Obstetrics. In both of these departments important advances have been made which are here noted. The Department of Diseases of the Skin was revised by Dr. George Henry Fox of this city, who has also exhibited a general interest in the work, and has given many valuable suggestions. The elegant chromo-lithographs—which alone make this edition far more attractive and valuable than previous editions—were prepared under the direction of Dr. Fox. They were made from colored photographs of patients who have been under his own professional observation, and were selected out of hundreds of cases.

In conclusion, the author may express the hope that the work, in its present improved form, will continue to be not only a ready and friendly guide in emergencies, but a stimulus to scientific thought and a means of diffusing and enforcing right ways of thinking on scientific subjects.

G. M. BEARD.

New York, February 1, 1879.

INTRODUCTION.

I.

REASONS WHY ALL PEOPLE SHOULD HAVE SOME GENERAL KNOWLEDGE OF MEDICAL SCIENCE.

It is one of the most cheering signs of our times that *science* is being diffused among the masses of the people.

On every hand we see evidences of an increasing love for scientific truth, even among those classes who formerly had no love for knowledge of any kind. Works on familiar science are now read with considerable eagerness; and the certain prospect is, that in a few years they will command a much wider circle of readers than they do at the present time.

The people are beginning to learn that science is for them and not for the few, and are now informing themselves of some of the general principles and facts of astronomy, of geology, and of chemistry; and our periodical literature is helping on the good work, oftentimes unconsciously. It is hard to find any prominent and popular newspaper or magazine that does not now and then present some interesting and valuable scientific facts and theories; and there are quite a number of journals which regularly devote a certain space to popular science in all its branches—chemistry, astronomy, geology, and medicine.

Nor is this all. Quite recently a journal has been established, one of the professed objects of which is to disseminate popular science among those classes who are the most eager readers of fiction.

These signs of the times are, I say, full of cheer. They give promise of a more generous culture, larger views, and more kindly tolerance in the future, among all ranks of society; for the tendency of scientific knowledge is always to liberalize.

The one great cause of the prevailing (but happily diminishing) narrowness in our current theologies, systems of education, and social customs, is *ignorance*. Ignorance begets prejudice, and for the poison of prejudice the only antidote is *knowledge*.

While, then, bidding God-speed to all who, like Agassiz, and

Huxley, and Youmans, and others, are endeavoring to popularize natural science, I desire here to make a special plea for the popular study of the *Human Body in health and disease*.

There are reasons why, especially at the present time, every one should make it a pleasure and a duty to become acquainted with some of the general facts in regard to the structure and functions of the human system, as well as the rules for preserving health, and checking or modifying disease.

These reasons are :—

1. *Because the human body is the greatest wonder of creation.* Nothing that man can devise, and nothing else that God has created, is worthy to be compared with the complex, wonderful machine which we call *man*.

A distinguished theologian truly and eloquently says : “ Men will cross the ocean to see a mountain or a waterfall, but there is more of grandeur in the human spirit than in all material nature.”

Now the human spirit is manifested through the material organization—the body ; it therefore becomes necessary that we should study the structure and functions of this body before we can well and truly understand the spirit of which it is the agent. The human brain, through which the soul is manifested, is a far more wonderful object than the loftiest mountain or the broadest ocean. It is true that the gigantic and imposing objects of nature,—mountains and oceans, forests and cataracts,—appeal more directly to the uneducated senses than do those objects which are comparatively minute and insignificant.

The element of size, the grandeur of immensity, the awfulness of height and depth, of length and breadth, can be much better appreciated by the great mass of unthinking and unreasoning humanity than objects which, though far more wonderful and suggestive, are yet less imposing and pretentious. Humanity the world over is more impressed by quantity than by quality. In proportion, however, as men advance in knowledge, in proportion as reason obtains supremacy over imagination, in that proportion will men cease to be impressed by mere size and quantity, and will learn to appreciate the beauty and grandeur of nature as revealed in objects that to the untaught mind would not only not be impressive, but would actually be revolting.

There are those who feel that the study of material substance is undignified and disagreeable. They declare that the study of anatomy suggests the dissecting-room, that the reading of hygiene tends to hypochondriasis, and that all discourses of medicine bring up horrid images of the hospital and sick-room. To all such objec-

tions I reply that knowledge itself is dignity, and in turn dignifies and ennobles that which to the untutored senses is insignificant and revolting. The human body is always small and insignificant in comparison with thousands of other created objects, animate and inanimate, and only in exceptional cases is it attractive or beautiful to the eye; and yet it is the most wonderful and suggestive of all.

The brain is but a small portion of the human body: its yielding and sightless mass can readily be held in the hollow of the hand; but in comparison with it all other wonderful objects of nature sink into insignificance. Place but a minute section of that brain beneath the microscope, and what before, to the unaided vision, was as simple in its structure as a formless mass of clay, reveals itself as a vast congeries of cells, group after group, layer on layer, of every variety of shape, infinite in their number, infinite in their communications, and infinite, too, as we may suppose, in their functions. Subject a fragment of that brain to the tests of chemistry, and we learn that the elements of which it is composed are substantially similar to those out of which are developed thousands of organized products of nature; and thence we are forced to infer that the vast superiority in function and capacity over all other created objects must be due solely or chiefly to some subtle and mysterious difference of molecular arrangement, which neither the microscope nor chemistry have yet been able to fathom.

2. *A general knowledge of medical science will aid us in preserving health and prolonging life, and thus will add much to our usefulness and happiness.*

The great art in medical science is not so much to cure disease as to prevent it. The great progress that medicine has made in recent times is shown not so much in the actual treatment of disease—although here also we are far more successful than formerly—as in forestalling and preventing it by obedience to the laws of health and wholesome sanitary reform.

For all that we are, and for all that we do in life, we are dependent on the body. The difference between one man and another is the difference in quantity and quality of bodily formation; for the soul manifests itself through the brain, which is an organ of the body, and is as much dependent on the brain for the character of its manifestations as the digestion is dependent on the apparatus of digestion.

Strictly speaking, there can probably be no such thing as a disease of the mind without a corresponding disease of some part of the body, and usually of the brain, which is the organ of the mind. In view of this consideration we see that it becomes a high and

solemn duty for every one to obtain some general knowledge of the human system in health and disease, in order to guard against evil, to ward off injury, to intensify and prolong existence.

It should be remembered that every evil that is experienced by the human system, every pain, every sorrow, every disease, comes by the operations of the great law of cause and effect. Nothing evil or good comes to us by chance. Contagions, epidemics, malarias, the myriad forms of nervous disease, the subtle and saddening phases of insanity and delirium—all these myriad woes of the human races are dependent on definite causes, many of which may be guarded against by those who have the requisite knowledge.

A general knowledge of medical science will help us to fulfil more intelligently and successfully our various duties as members of society.

Science must not be confined to scientific men. A knowledge of science in its various departments, and especially a general knowledge of the structure and operations of the human body and of some of the laws of disease, will make us better lawyers, better clergymen, better merchants, better farmers, better laborers, better mechanics and artisans, better wives and mothers and husbands and fathers, better citizens, and better in every condition and relation of society.

The habit of studying and reading on science is important, not only for the facts that we learn, but on account of the habit which we thereby form of looking at questions from a scientific point of view. We are all of us too much inclined to form our opinions from prejudice, and from a general impression, without regard to truth or facts. The consequence is that society is filled with error. The consequence is, that even in this enlightened age and throughout this enlightened country, the opinions of masses of people on nearly every important subject are more or less erroneous. On nearly every page of this present work I have been obliged to refute some deeply-rooted, widely-spread error concerning diet, or stimulants and narcotics, or sleep, or exercise, or some form of disease. Erroneous views on medical science confront the physician wherever he turns—in the street, in the store, at public assemblies, in the halls of legislatures and chambers of justice, in the periodical literature and in our standard works of genius, in every family, and by every bedside.

These are not the results of ignorance alone. They are the results of a *deficiency in the scientific spirit*, and an excess of dogmatic prejudices in society.

The *scientific spirit* differs from the dogmatic spirit in these respects :

First. In the pursuit of truth it endeavors to dismiss all prejudice, all preconceived impressions. It has no theories to prove and no wishes to gratify, except the love of truth.

Secondly. It never ASSUMES that anything is true until it is proved to be true; and always holds itself ready and willing to change any views, however dear or long-cherished, as soon as they are proved to be erroneous.

Thirdly. When it has found the truth on any subject, after careful and patient balancing of all the facts that bear upon it, it eagerly embraces and proclaims that truth, without ever asking for an instant whether its apparent tendencies may be good or evil.

The great want of our country at the present time is a wider diffusion of this scientific spirit, so that men will form their opinions, especially on social and political topics, less by their hopes and desires, expectations and fears, and more by the *facts*.

When I write on the ignorance of the country on matters of science, I know not where to begin or where to end. This ignorance is not confined to the lower classes; it is even more prominently observed and far more injuriously felt among the educated and influential. In our country this scientific ignorance is especially to be deplored, because here all men are created free and equal. all have equal voice in the administration of government, and all have equal chance to rise to positions of honor and influence. Our present social, legislative, and judicial systems are so defective, that men who know nothing whatever of science are continually called upon to decide important scientific questions affecting the rights, the privileges, and the duties of those who, perhaps, know far more than they, not only of science, but of every other department of thought.

Legislatures, not one of whose members can answer the simplest fundamental question concerning the nature or the history of stimulants and narcotics, who do not know and have not thought to inquire whether they came chiefly into use fifteen hundred years before Christ or fifteen hundred after, are yet every year called upon to enact laws to prohibit or regulate their use in society. Is it surprising that their legislation is so absurd and inconsistent? Judges and juries, who have not the faintest conception whether insanity is a symptom of disease of the brain or of the liver—who in all their lives have never given five minutes of consecutive thought to any scientific subject whatever—are compelled, under our present system of laws, to decide on this momentous question

of sanity or insanity, not only in cases of life and death, but also in cases where property even, so much more valued than life, is at stake. Is it surprising that the wicked so often escape and the irresponsible are so often punished?

Clergymen, editors, and public teachers, who know all subjects better than they know the science of life, are expected and required to pronounce upon the right or wrong of questions which do not and should not rise into the sphere of morals until they have first been determined in the sphere of experience. Is it surprising that even our most conscientious public instructors must sometimes put darkness for light and light for darkness on many of these important themes?

Parents and guardians, who have never themselves been properly taught concerning the structure or the functions of the human body, are obliged to train up their children to the same dogmas and prejudices and erroneous impressions by which they themselves have been inspired. Is it surprising that our children grow up in error? Would it not indeed be still more surprising if they possessed any true or real knowledge on any question of hygienic or medical science?

The truth is, that there is scarcely any important social, political, or religious question of our time that may not be aided in its solution by a knowledge of the leading principles of medical science. The rights and duties of women, the status of the Africans, the future of the Chinese, and many other analogous questions of minor importance, would be solved much more readily and more correctly if philanthropy would not so blindly refuse the aid of physiology. But, unfortunately for the cause of truth, only those who have at least some general knowledge of medical science, or who have enjoyed some training in that department, are willing to listen to arguments based on the facts of science, especially when they militate against their prejudices and desires. Prof. Goldwin Smith, in his masterly address on education recently delivered at Albany, said that the voice of physiology should be heard on this great question of the education of woman; but until the people, both the leaders and the masses, are educated into a scientific spirit, the efforts of physiology will be vain. Though she cry aloud in every language and on every corner of the street, yet her speech will be in an unknown tongue, and her voice will be drowned in the jeers and groans of the multitude.

It cannot be denied that even at the present time there exists a deeply-seated prejudice against scientific men. They are regarded as the enemies of truth, although their professed object is the pur-

suit of truth. They are branded with meaningless but repulsive epithets,—materialists, infidels, atheists,—and are held up before the people as solemn and impressive warnings. The cure for this unfortunate prejudice lies in the general diffusion of scientific knowledge.

4. *The study of the principles and facts of medical science is exceedingly pleasurable.*

If the pursuit of knowledge is the highest and most enduring pleasure of life, the study of science is the most enjoyable department of knowledge.

The calm and unworried pursuit of science is probably the purest and most enduring intellectual pleasure of which human nature is capable. It is also exceedingly conducive to health. As will be shown in my essay on the Influence of Occupations on Health and Longevity, philosophers and men of science attain a great average longevity.

Children should be instructed in the interesting and important departments of physiology and hygiene, not only at school, but in the family circle. It is not right nor necessary that the study of these subjects should be made dry and dismal. By the aid of maps, charts, pictures, attractive books, and especially by the exercise of kindly care on the part of instructors, these theories can be made not only instructive but actually fascinating. The commandments of physiology and hygiene should be taught diligently unto our children, line upon line, precept upon precept, here a little and there a little, in the house and by the way, at their lying down and their rising up. Much of the scientific instruction given to children in early life will not be fully understood in all its transcendent importance until after years; but in time of need they will both remember and appreciate its value.

They will remember it when they rise to positions of responsibility and posts of honor, and will guide their judgment and inspire their lives by its teachings. They will remember it in the hour of temptation, and will derive therefrom wisdom to direct and strength to resist the force of mastering passions. They will remember it in the time of darkness and sorrow, and will rejoice in the light of its truths, and find the rarest of consolation in the activity of its pursuit. They will remember it when they themselves are parents, and in turn will teach it to their children, and they again to their children's children, unto the remotest generations.

II.

REASONS WHY THE PROFESSION SHOULD LABOR TO DIFFUSE A GENERAL KNOWLEDGE OF MEDICAL SCIENCE AMONG THE PEOPLE.

THE duty of the profession to diffuse a knowledge of medical science among the people is rendered imperative by these *four* considerations :

1. *Because all people everywhere need, and should have, some general knowledge of the human body in health and disease.*

The time has gone by when it was thought to be necessary that learning should be confined to the few. It is the glory of our century that knowledge of all kinds is diffused among the masses of the people. The time was when theology was confined to the clergy, and was the privilege of monks and cloisters ; religion is now the duty and the joy of the ignorant and the lowly. The time was when all government and law were in the hands of a few aristocrats, and even of some single monarch ; in our day and country the people rule, and kings and queens, presidents and senators, are but their servants.

Science must now follow in the wake of theology and government. If the masses of the people are to have all the power in Church and State, they certainly must not be left in ignorance. For the ignorance of humanity there is only one antidote, and that is knowledge. Of all departments of knowledge, none is so important as that of ourselves. It is impossible to know ourselves without knowing the structure of the human body, the functions of its organs, and the laws of health. It is impossible to acquire this knowledge without careful study, diligent reading and patient repetition, in all the recognized methods of imparting knowledge. It must be taught to children in the school and by the domestic fireside, and in juvenile literature. It must be taught to parents from the pulpit, the platform, and in the periodical press, and in such works as these.

The present ignorance of society in regard to anatomy, physiology, and the laws of health is truly appalling. Even the clergy, who are so advanced in general culture, and who should be the teachers of hygiene as a part of morality, are as a profession utterly in the

dark in regard to the simplest laws of life and health. Theologians and professors, college presidents and pulpit orators, who have learned all important languages, living and dead, who can repeat at call the names of all the imbecile and insane kings of Europe and the dates of their administrations, do not even suspect the nature of the processes of respiration or of digestion every moment going on in their own bodies; and even give no reason for the faith that is in them, that the brain rather than the liver is the organ of the mind.

Even men of general science, who plan great inventions and understand all the machinery of man's devising, know nothing of the most wonderful machine of all—the human body. If these things be done in the green tree, what shall be done in the dry? If our teachers, and the teachers of our teachers, know little or nothing of themselves, what shall we say of the great masses of the people? What shall we say of the millions of farmers, mechanics, laborers, and the solid yeomanry of our land, on whose virtue and intelligence the welfare of the republic must ever depend?

The profession must exert its influence to introduce the systematic study of hygienic science in all of our colleges and institutions of learning.

Time was when the standard of scholarship was necessarily estimated by the extent of one's familiarity with dead languages; when the span of a thousand years—the dark ages of humanity—intervened between the scholar in the cloister and the literary wealth of the world; when, in short, the student was forced to choose between treasuring up the learning of ancient times, and knowing nothing at all.

That necessity has long since gone by, but the system of instruction to which it gave rise in its leading features lives to-day. Bacon never uttered a profounder or more beautiful thought than when he said that what is called the antiquity of the world is really its youth. If the ancients could be alive again to-day, they surely would be the first to bow at the feet of the nineteenth century.

When we consider the marvellous scientific progress of the last century—that within that time Geology has arisen out of the darkness of conjecture and has developed into a more comprehensive and enduring science; and that by the discovery of hydrogen by Cavendish, of oxygen by Priestley, of nitrogen by Rutherford, and by the labors of Sir Humphry Davy, Liebig, and their followers, the science of chemistry has been as it were created, and not since the year 1766; that within less than this time that universal agent,

Electricity, has revealed itself to man in its effects if not in its nature,—has indeed deigned to serve him as his fleetest messenger through the air and under the sea, as the faithful and rapid copyist of works of art, as a powerful means of illumination, and as a most effective healer in disease; that within the last fifty years the mechanic arts, in their myriad ramifications, have made more effective progress than other eras have witnessed in twice as many decades; when we consider that astronomy, the most ancient of sciences, the boast of the Egyptians and Chaldeans—which is indeed in its very essence a study of centuries—has not been without its refinements even during the present generation—nay, even within the year that is just passed; when, I say, we thus consider all that the last fifty years has done for science,—and more than all, when we contemplate the wondrous possibilities of the fifty years to come, and for which we now have but laid the foundation; and when, on the other hand, we consider how little these branches are taught or even suggested to our undergraduates, we can but wonder that an age which has revolutionized society by its activity in science, has made so little impression on those institutions that ought to be, if they are not, the centres and the repositories of the world's progress.

It is neither necessary nor desirable that hygienic or other science should supplant the languages. It is the duty of the profession, however, to see that in all our institutions of learning it is placed on the *same footing as all other important departments*; that it receives something more than a merely incidental and superficial attention; and that it is made *equally binding with all other recognized studies of the course*.

2. *Because physicians are the only class who are authorities in medical science, and who are qualified to give instruction in it.*

Medical science is a large subject, and it takes a lifetime to comprehend it. People look to those whose lives are devoted to this subject to teach them what they ought to know. They have a right to do so. Of those to whom much has been given, much will be required. If we know that which will be of service to our fellows, we have no right to keep it to ourselves alone. A miser of knowledge is even more censurable than a miser of money, because he is more intelligent, and therefore more responsible. It is even more wrong for us to hoard knowledge than to hoard specie, for knowledge is more valuable than gold or silver or precious stones.

Until quite recently the clergy have been the chief instructors of the people in medical science; but they have unfortunately taught more of error than of truth. The fault, however, is not with the

clergy but with the physicians. The clergyman must first be himself instructed before he can instruct others. The duty of teaching medical science to the clergy devolves upon the physician, because in all such matters he is the first authority and last appeal. It is right and proper and noble for the pastor to teach his flock the laws of health, and to enjoin their observance as a high moral duty; but he must know whereof he affirms, and the true knowledge on these themes he must learn from the physician.

3. *Because the instruction of the people in medical science has been almost entirely in the hands of ignorant and unprincipled charlatans.*

This lamentable and well-known fact, which ought long since to have aroused the profession to its great duty, seems to have had the opposite effect, and has deterred them from attempting any systematic instruction of the people. There are those even now who fear to write or lecture for the masses, lest they may thereby become classed with the ignorant and villanous quacks who in this country have appropriated this department almost entirely to themselves. I hold to a very different doctrine. I hold that the example of charlatans, so far from discouraging, should rather stimulate the profession to follow after them and drive them off the track. It is because the enemy have planted tares in the field, that we should enter in and sow the good seed. It is because the philistines have already invaded the land, that we should hasten to take possession.

The noblest and best part of our mission is not to cure disease, but to prevent it. The true and only way to prevent disease is to diffuse through all ranks of society a general knowledge of the human body and of the laws of health.

There may be those who fear lest the profession may lose its dignity by coming down from its lofty eminence and feeding the hungry multitude. In the infancy of science, in the darkness of the middle ages, such fear was, perhaps, not unnatural; but the time for that has now long gone by. When the sun is rising it gilds only the higher mountain tops; when it mounts to noonday it sends its rays, bright, warm, and abundant, into the depths of the valleys and the darkest crevices of the rocks. Just so when science was first rising upon the world, its light was only seen and its warmth only felt by the philosopher, the recluse; as it is now ascending higher in the sky, it should shine, with wisdom and healing in its beams, on the walks of the humble, the lowly, and the sorrowing.

Science is no more degraded by ministering to the wants of the people than is the sunlight when it trails its beams along the valleys, or the rain when it falls alike on the evil and the good.

Jean Paul Richter has somewhere presented in substance this simile, which the disciple of science should ever bear in mind. "Beautiful is the eagle when it soars aloft in the sky and plumes its distant flight towards the sun, but more beautiful still when it descends to the earth and brings food to its helpless offspring in their nest; so the philosopher is noble when he lives above the world in the cold atmosphere of science, but nobler still when he descends from his lofty heights and brings hope and comfort to the suffering sons of men."

4. *Because the profession will elevate and benefit itself by thus instructing the people in medical science.*

All physicians the world over will agree that ignorant people make the worst patients. The lower classes are proverbially exacting and unreasonable, and too often unappreciative. In proportion as people are educated—and especially in science—in that proportion do they become considerate towards their physician, obedient to his orders, and grateful for his services.

The effect of the popularization of medical science will be not to diminish the practice of the profession, but to increase it. Patients are deterred from consulting educated physicians, not by knowledge but by ignorance; not by their ability to prevent or treat diseases, but their inability to distinguish between those conditions which are beyond all hope, and those which in scientific hands are both relievable and curable.

When the people are educated to a full understanding of the wonderful achievements of science in the past, and the vast progress that it is making in the present, and the wide distinction between the physician and the quack, then will they know—what the masses of our country have yet to learn—that the educated members of the profession are not the enemies but the friends of advancement, and that on the average they are as much more successful than the charlatans, as they are more scholarly and more honest.

It is only by a general diffusion of popular science that the vast army of charlatans—that are now working such ruinous havoc in the best ranks of society—can be successfully combated and dispersed. The scientific man is pained to his heart's core when he sees—as every day he is compelled to see—the best educated and finest cultured minds of the country—our leaders in literary, professional, and business life—ruined in health and in purse by the vilest quacks that ever disgraced any age or country. The quackery of our day feeds and fattens on the ignorance of the learned. It derives its rich support from the fact that the people know all other things better than they know science. The scientific physi-

cian who long gazes upon this great rush of humanity after quack doctors, quack books, quack medicines—after all forms of error and one-sided “pathies” and “isms,” feels much like the philanthropist who, from the bank of a mighty stream, sees his fellow-beings hurried along in the flood and engulfed in the whirlpool, while he is powerless to save.

Salvation from quackery will only come from popular instruction.

Besides all this, it is the duty of the profession, through the popularization of science, to make itself a *power in society*.

It is our duty in this way to make our influence more widely felt as a ruling force through all the departments of modern activity.

For all these reasons we hail with joy the recent endeavors of some of our leading physicians to popularize medical science. The system of lectures on science lately attempted by Professors Huxley and Carpenter in London; the noble example of Professors Willard Parker and E. R. Peaslee in New York; the recently published essays of Bowditch, Jarvis, Allen, Youmans, Hammond, Flint, Mitchell, Griscom, Peters, Roosa, Harris, Byford, Jeffries, Smith, and other leading authorities in our profession; all these are the emphatic protests on the part of the profession that the people shall no longer dwell in darkness, that the medieval age of narrow and selfish exclusiveness has passed away, and that men of science shall hereafter follow in the path of theologians and law-givers, and sow the good seed of truth broadcast through society.

In order to popularize science it is not enough to provide textbooks for the young. We must sow beside all waters. We must make the magazines, the daily and weekly press, the platform, the lecture hall, the organizations of philanthropy, the pulpit and the Sabbath-school, channels of communication, through which knowledge of science shall flow to the uttermost corners of the earth.

PUBLISHER'S NOTE.

THIS revised and enlarged edition of *Our Home Physician* is presented with many new and valuable features.

The departments of Anatomy, Physiology, and Hygiene have been carefully corrected and illustrated. The portion of the work pertaining to diseases, their causes, symptoms, and treatment, has been largely rewritten and very much extended in scope and detail, and arranged in Cyclopædia form. In order to make the work complete and authoritative, and in all respects fully abreast of the times, the revision of the several departments of the work has been entrusted to well known and able authorities in their respective departments.

They have called to their aid the experience and skill of the medical world, as set forth in the vast domain of medical literature of this country and of the continent of Europe. (*See List of Authorities, page 29.*)

It is believed that this was the first work of the kind in this country that has been prepared by regular physicians of education and character. In this present revised and enlarged form, by the aid of a corps of Medical Authorities of high professional standing, it may be claimed without question, that no other similar work, in Europe or America, equals or approaches it in fullness and comprehensiveness of plan, convenience of arrangement, or in lucidity and attractiveness of matter and style.

The high rank accorded to the former treatise has induced the publisher to venture the investment of a large sum in the production of a series of Chromo Plates of Anatomy and Diseases of the Skin, carefully excluding any and all that pander to a morbid curiosity.

These plates are reproduced from life-photographs, printed in seven colors, and represent the various phases of skin disease—an enterprise never before attempted in a domestic work. This has been done under the supervision of Dr. GEORGE HENRY FOX,* who selected the photographs from several hundred rare and special cases in his experience in hospital, dispensary and private practice, and which have never before been published. The general diffusion of illustrations throughout the work, and especially of medical plants, is a feature of great value and interest to the public.

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EXPLANATIONS AND SUGGESTIONS FOR THE READER.

1. In order to get information on any subject treated of in this book, look in the index.

Although the departments of Anatomy, Physiology, Hygiene, Description of the Principal Diseases and Remedies (alphabetically arranged), Prescriptions and List of Medicines are so arranged that one who is familiar with the book can tell at once where to look for information on any particular theme, yet the surest and easiest way is to consult the index at once.

2. The subjects of Physiology, Diet, Sleep, Air, Sunlight, Exercise, Stimulants and Narcotics, Influence of Occupation on Health and Longevity, Laws of Inheritance, Influence of Climate, Management of Infancy, and many of the principal diseases, are so treated that they can be read with interest and studied with profit, as well as merely referred to.

3. *The doses of the medicines prescribed in this book are designed for adults.* The rule for graduating the dose for children, according to the age, is given on page 595.

When any remedy is recommended for the treatment of any disease, the dose is not usually given, because it must necessarily vary with the age of the patient. The way to ascertain the dose in all such cases is to refer to the description of the remedy itself, which can be found in the index. In those exceptional cases where the dose is given it is designed for adults, unless specially ordered otherwise.

4. Under the treatment of the diseases, I have given *principles* of treatment rather than minute and bewildering details. The tendency with patients is almost always to give too much medicine, and to give it in too large doses. It will be observed that the treatment recommended, even for the most serious diseases, is frequently quite simple—consisting chiefly in good nursing, refreshing drinks, thorough ventilation, and the cautious administration of perhaps one or two medicines.

Those who have been accustomed to indiscriminate dosing with great combinations of drugs, will no doubt be surprised, on consulting this book, to find even some of the most terrible diseases are treated by a *few remedies and by simple prescriptions.*

It has been found in recent times, that, with some exceptions, simple prescriptions, containing but one, two, or three substances, are more sure and reliable than those containing a larger variety. As will be explained

under "*Prescriptions*," combinations of a large number of substances are in certain cases of advantage; but these combinations should not usually be made by patients, but by competent druggists.

5. Throughout the work the *prevention of disease* is kept continually prominent. The laws of health are treated of in great detail, because it is believed that by thoroughly knowing and observing them, much of the disease of the world could be prevented. The power of medicine at best is limited. Most of fevers run their course, and all that medicine can do is to relieve, to mollify, and sustain. The positive efficacy of medical science is most observed in the treatment of those *chronic* diseases where nature is incapable of effecting a cure, but where various combinations of remedial measures assist her to accomplish tasks to which, without such assistance, she would be unequal.

Most of chronic diseases, especially of the nervous variety, are best treated by the same methods by which they should be prevented—that is, by obedience to the laws of health. Therefore, in the treatment of all these nervous diseases, references are continually made to the subjects of diet, sleep, air, sunlight, exercise, and other important departments of hygiene.

PARTIAL LIST OF AUTHORITIES

CONSULTED, QUOTED, AND REFERRED TO IN THIS WORK.

ANYTHING like a complete list of all the sources from which the information in a work of such a character as this is derived, is manifestly impossible. I have only attempted to acknowledge those authorities in English, French, and German, that are nearest at hand, and to which I am chiefly indebted. I have also liberally consulted the medical and scientific periodicals, American and foreign, and have thereby received indispensable aid in my endeavor to represent the most recent views and experience of physicians of all countries.

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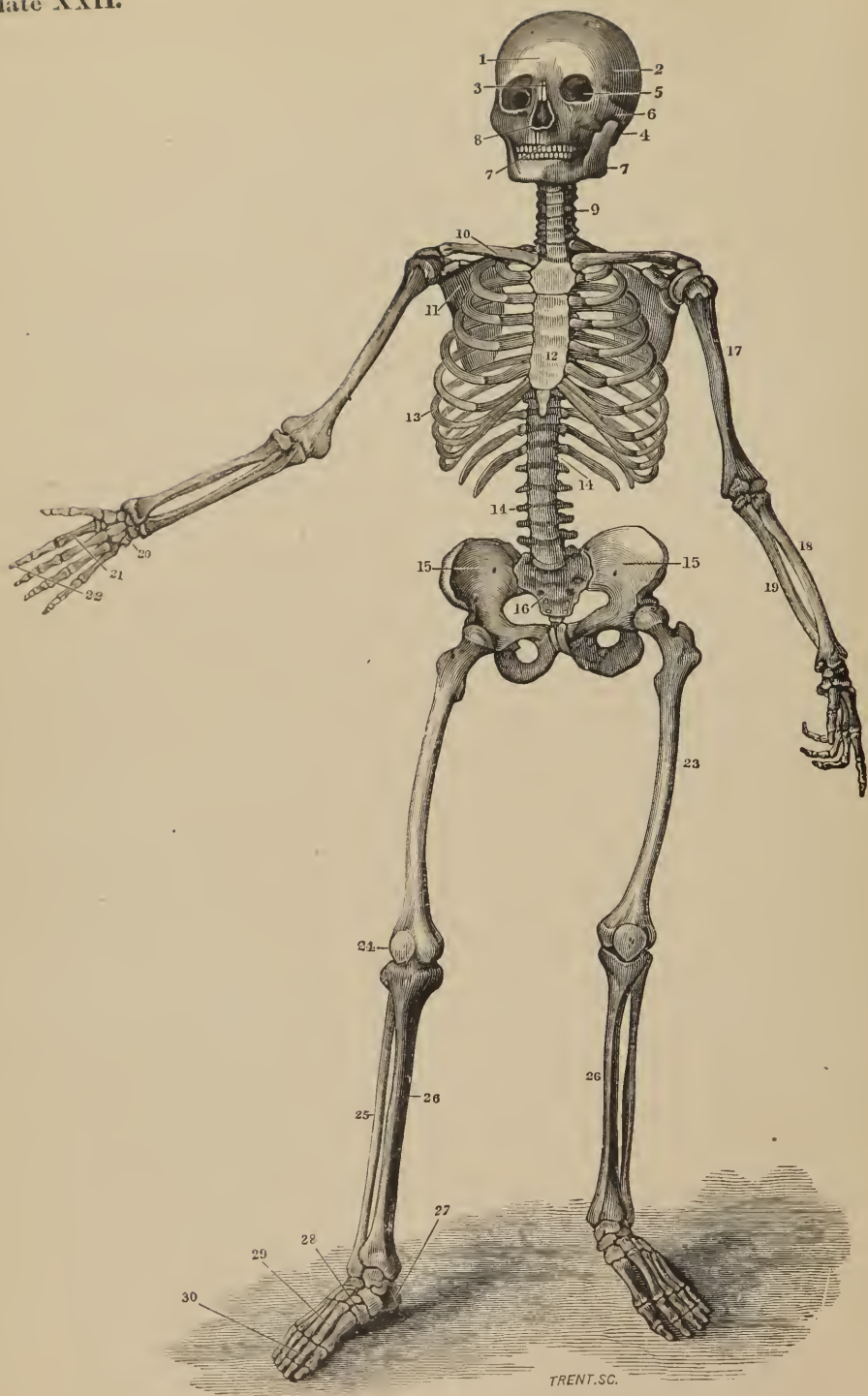
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TRENT, SC.

THE
STRUCTURE AND FUNCTIONS
OF THE
HUMAN BODY.

ANATOMY AND PHYSIOLOGY.

BRIEF VIEW OF THE HUMAN BODY.

THAT we may understand for what purpose the human body is made to consist of such a variety of parts; why it possesses such a complication of nice and tender machinery; and why there was not a more simple, less delicate, and less expensive frame, it is necessary that we, in our imagination, make a man; in other words, let us suppose that the mind or immaterial part is to be placed in a corporeal fabric, in order to hold intercourse with other material beings by the intervention of the body; and then consider what will be wanted for its accommodation. In this inquiry we shall plainly see the necessity, advantage and wonderful adaptation of most of the parts which we actually find in the human body. And if we consider that in order to answer some of the requisites, human wit and invention would be very insufficient; we need not be surprised if we meet with some parts of the body whose use we cannot yet perceive, and with some operations and functions which we cannot explain. We can see that the whole bears the most striking tokens of excellencing wisdom and ingenuity; but the imperfect senses and capacity of man cannot reach every part of a machine, which nothing less than the intelligence and power of the Supreme Being could contrive and execute.

First, then, the mind, the thinking, immaterial agent, must be provided with a place of immediate residence, which shall have all the requisites for the union of spirit and body; accordingly it is provided with the brain, and is governor and superintendent of the whole fabric.

In the next place, as it is to hold a correspondence with all material external beings, it must be supplied with organs fitted to receive the different kinds of impressions which they will make. In fact, we see that it is provided with the organs of sense, as we call them; the eye is adapted to light; the ear, to sound; the nose, to smell; the mouth, to taste; and the skin, to touch.

Further, it must be furnished with organs of communication between itself in the brain, and those organs of sense, to receive information of all the impressions that are made upon them; and it must also have organs between itself in the brain, and every other part of the body, fitted to convey its commands, and to influence the whole. For these purposes the nerves are actually given. They are soft white cords which rise from the brain, the immediate residence of the mind, and disperse themselves in branches through all parts of the body. They convey all the different kinds of sensations to the mind in the brain; and likewise carry out thence all its commands to the other parts of the body. They are intended to be occasional monitors against all such impressions as might endanger the well-being of the whole, or of any particular part; which vindicates the Creator of all things, in having actually subjected us to those many disagreeable and painful sensations to which we are exposed from a thousand accidents in life.

Moreover, the mind, in this corporeal system, must be endowed with the power of moving from place to place; for the sake of intercourse with a variety of objects; of escape, from such as are disagreeable, dangerous, or hurtful; and for the pursuit of such as are pleasant or useful. Accordingly it is furnished with limbs, muscles, and tendons, the instruments of motion, which are found in every part of the fabric where motion is necessary.

But to support; to give firmness and shape to the fabric; to keep the softer parts in their proper places; to give fixed points for, and the proper directions to, its motions, as well as to protect some of the more important and tender organs from external injuries, there must be some firm prop-work interwoven through the whole. And in fact, for such work the bones are given.

This prop-work is not made with one rigid fabric, for that would prevent motion. Therefore there are a *number* of bones.

These pieces must all be firmly bound together, to prevent their dislocation. And this end is perfectly answered by the ligaments.

The extremities of these bony pieces, where they move and rub upon one another, must have smooth and slippery surfaces for easy motion. This is most happily provided for, by the cartilages and mucus of the joints.

The spaces between these different organs must be filled up with some soft and ductile matter, which shall keep them in their places, unite them, and at the same time allow them to move a little upon one another. These purposes are answered by the cellular membrane or adipose (i. e. fatty) substance.

There must be an outward covering over the whole apparatus, both to give it compactness, and to defend it from a thousand injuries ; which in fact, are the very purposes of the skin and other integuments.

Lastly, the mind being formed for society and intercourse with beings of its own kind, must be endued with powers of expressing and communicating its thoughts by some sensible marks or signs, which shall be both easy to itself, and admit of great variety. Accordingly it is provided with the organs and faculty of speech, by which it can throw out signs with amazing facility, and vary them without end.

Thus we have built up an animal body which would seem to be pretty complete ; but as it is the nature of matter to be altered and worked upon by matter, so in a very little time such a living creature must be destroyed, if there is no provision for repairing the injuries which it must commit upon itself, and those to which it must be exposed from without. Therefore a treasure of blood is actually provided in the heart and vascular system, full of nutritious and healing particles, fluid enough to penetrate into the minutest parts of the animal, impelled by the heart, and conveyed by the arteries. It washes every part, builds up what was broken down, and sweeps away the old and useless materials. Hence the necessity or advantage of the heart and arterial system.

What more there is of the blood than enough to repair the present damages of the machine, must not be lost, but should be returned again to the heart ; and for this purpose the venous system is provided. These requisites in the animal explain the circulation of the blood.

The old materials which have become useless, and are swept off by the current of blood, must be separated and thrown out of the system. Therefore glands, the organs of secretion, are given for straining whatever is redundant, vapid, or noxious, from the mass of blood ; and when strained, they are thrown out by emunctories, called organs of excretion.

But as the machine is constantly in action, the reparation must be carried on without intermission, and the strainers must always be employed. Therefore there is actually a perpetual circulation of the blood, and the secretions are always going on.

All this provision, however, would not be sufficient ; for that store of blood would soon be consumed, and the fabric would break down, if there was not a provision made for fresh supplies. These, we observe, are profusely scattered around us in the animal and vegetable kingdoms ; and hands, the fittest instruments that could be contrived, are furnished for gathering them, and for preparing them in a variety of ways for the mouth.

But these supplies, which we call food, must be considerably changed ; they must be converted into blood. Therefore are provided teeth for cutting and bruising the food, and a stomach for melting it down ; in short, all the organs subservient to digestion. The finer parts of the aliments only can be useful in the constitution. These must be taken up and conveyed into the blood, and the dregs must be thrown off. With this view the intestinal canal is provided. It separates the nutritious part, which we call chyle, to be conveyed into the blood by the system of absorbent vessels ; and the coarser parts pass downwards to be ejected.

We have now got our animal not only furnished with what is wanting for its immediate existence, but also with powers of protracting that existence to an indefinite length of time. But its duration, we may presume, must necessarily be limited ; for as it is nourished, grows, and is raised up to its full strength and perfection so it must in time, in common with all material beings, begin to decay, and then hurry on to final ruin. Hence we see the necessity of a scheme for its renovation. Accordingly wise Providence, to perpetuate, as well as to preserve his work, besides giving a strong appetite for life and self-preservation, has made animals male and female, to continue the propagation of the species to the end of time.

Thus we see, that by the very imperfect survey which human reason is able to take of this subject, the animal man must necessarily be complex in his corporeal system, and in its operations.

He must have one great and general system, the vascular, branching through the whole for circulation ; the nervous, with its appendages the organs of sense, for every kind of feeling ; and a third, for the union and connection of all these parts.

Besides these primary and general systems, he requires others which may be more local or confined ; one for strength, support, and protection, the bony structure ; another for the requisite motions of the parts among themselves, as well as for moving from place to place, the muscular system ; another to prepare nourishment for the daily recruit of the body, the digestive organs ; and one for the continuance of the species.

In taking this general survey of what would appear originally to

be necessary for adapting an animal to the situations of life, we observe, with great satisfaction, that man is accordingly made of such systems, and for such purposes. He has them all ; and he has nothing more, except the organs of respiration. Breathing it would seem at first difficult to account for ; we only know it from observation to be essential to life. Notwithstanding this, when we see all the other parts of the body, and their functions, so well accommodated for, and so wisely adapted to their several purposes, there can be no doubt that respiration is so likewise ; accordingly the discoveries of Dr. Priestly, and of later inquirers, have thrown light upon this function also, as will be shown in its proper place.

Of all the different systems in the human body, the use and necessity are not more apparent than the wisdom and contrivance which have been exerted in putting them all into the most compact and convenient form ; in disposing them so, that they shall receive helps from one another ; and that all or many of the parts shall not only answer their principal end or purpose, but operate successfully and usefully in a variety of secondary ways.

If we consider the whole animal structure in this light, and compare it with any machine in which human art has exerted its utmost skill ; (suppose the best contrived ship that ever was built ;) we shall be convinced beyond the possibility of doubt, that intelligence and power have been exerted in its formation far surpassing anything of which men can boast.

One superiority in the animal economy is peculiarly striking. In machines of human contrivance there is no internal power, no principle in the machine itself, by which it can alter and accommodate itself to any injury which it may suffer, or remedy any mischief which admits of repair. But in the animal body this is most wonderfully provided for by the internal powers of the system ; many of which are not more certain and obvious in their effects than they are above all human comprehension as to the manner and means of their operation. Thus a wound heals by a natural process ; a broken bone is made firm again by a deposit of new bony matter ; a dead part is separated and thrown off ; noxious juices are driven out by some of the emunctories ; a redundancy is removed by some spontaneous bleeding ; a bleeding naturally stops of itself ; a great loss of blood from any cause, is in some measure compensated by a contracting power in the vascular system, which accommodates the capacity of the vessels, to the quantity contained. The stomach gives information when the supplies have been exhausted ; gives intimations, with great exactness, of the quantity and quality of what is wanted in the present state of the machine ; and in proportion as it

meets with neglect rises in its demands, and urges its petition in a louder tone, and with more forcible arguments.

For the protection of the animal amidst the fluctuations in the heat of external bodies, a power of generating warmth has been provided; and to prevent its undue accumulation in a heated atmosphere, or its excessive loss in a cold one, the quantity carried away is regulated with wonderful nicety to its wants; so that an equal temperature is preserved in all the range of climates, from the extreme point of habitable existence near the poles, to the intense heat of the equatorial regions.

A farther excellence in the natural machine, and if possible still more astonishing and more beyond all human comprehension than that of which we have been speaking, is the capability individuals possess of reproducing beings like themselves, which are again endued with similar powers for producing others, and so of multiplying the species without end.

These are powers which mock all human invention or imitation. They are characteristics of the Divine Architect.

OF THE BONES.

BONE AN ORGANIZED SUBSTANCE.

The bones, constituting, as was before observed, the basis and support of the body, are necessarily its most hard and solid parts, appearing to superficial observation to be merely inorganic compounds; resisting for ages the test of time; and remaining impressive memorials of the decay of past generations. Hence, some have been led to think they were without organization, and consequently not liable, like the soft parts of the body, to disease and death. But this erroneous opinion is refuted by minute dissection, which discovers the internal structure of bones, traces their numerous vessels, and shows them to be supplied with blood like the softer parts; and also, that, like these parts, they have their periods of growth and decay, and are liable equally with them to internal diseases, and to derangement from external injuries.

If, for instance, the vessels of adult bone be injected with red colored wax, and the earthy particles be dissolved by a mineral acid, the bone will be reduced to a membranous state, but a jelly-like substance, full of vessels, will remain; and these vessels will now appear as numerous as in the fleshy parts, a proof that they were before concealed only by the earthy portion of the bone.

Before *birth* all the bones of the fœtus are of a cartilaginous

character. This cartilage is not, as was erroneously supposed, hardened into bone; but is absorbed and carried away by one set of vessels, while another set is employed in depositing, in its room, matter for forming the new bones. This process is effected in the following manner.

The transparent vessels of the cartilage first begin to dilate to receive the red blood; at this time an artery can be observed penetrating towards the middle of the bone; this artery is soon accompanied by others, all forming a sort of net-work, and conveying red blood, and now ossification may be said to have commenced. Gradually the cartilage grows opaque and brittle, and will no longer bend. The bony centre spreads according to the dimensions of the bone; and may be known by its hard feel, when examined by a sharp instrument; similar points of ossification are now found and in a like manner, in other parts of the bone, till its whole body becomes opaque; and now the vessels, stretching from the centre towards the extremities, having penetrated the cartilages which separate the heads from the body of the bone, enter these heads, when ossification commences here also. From this mode of process it will be seen, that the heads and body are at first distinct bones, formed separately and connected only by cartilage, and they are not united till the age of eighteen or twenty years.

Thus the formation of bone is effected by the action of its blood vessels, which may be seen entering in one great trunk into the body of each bone, and spreading thence towards both extremities. It is by this action all the parts of the body are evolved; it forms the blood as is seen in the case of the chick, which has no other way of receiving this fluid but by forming it within its own body; and from the blood are all the solids constructed by the same action of the vessels. All animals have the power of assimilating their food, and with the assistance of air, of converting it into blood; and as by the action of their larger vessels they can thus elaborate fresh supplies of red blood, so the action of particular vessels is intended to prepare particular parts. Thus some add to the solids to assist growth, others for supplying the continual waste; while more are employed in effecting the different secretions within the body, one of which is the formation of bone. In this manner then is ossification accomplished; the arteries of the transparent cartilage of the fœtus, beginning at length to receive the red blood, commence their deposition of earthy matter. This at first appears in numerous specks, which spreading, afterwards meet, and at last constitute perfect bone. But, while these arteries are thus employed in depositing bone, there are other vessels, (called absorbents, from the nature of their function) busily engaged in re-

moving the cartilage, modelling the new bone into its proper form, shaping out its cavities, and also hardening it into due consistence.

This organization of arteries to deposit bone, and of absorbents to convey away the cartilage, which was necessary to its formation and growth, is also essential to the life and health of the full formed bone. Indeed, the latter depends on the regular deposition and reabsorption of the parts; for by varying the degree of action in either of these operations, bone may be made to inflame and ulcerate like the softer parts, or to become too brittle by an over secretion of earth, or too soft from its excessive absorption. It is this earth which constitutes the hardness, and, indeed, all the serviceable properties of bone. It lies dead in the inorganic interstices of the membrane, and is united with animal mucilage to give it consistence and strength.

That the bones, in common with the rest of our frames, undergo a constant renovation of parts, is proved by the following experiment. If madder be given to animals, then withheld for some time, and afterward given again, in twenty-four hours after it had been first given, all their bones will become tinged; and in two or three days the color becomes very deep. In a few days after the madder has been discontinued, the red color disappears; but on its being again given to the animals, their bones become a second time tinged. Further, the absorption of bones, is also proved by the disappearance of a carious or dead bone, even before the skin is opened; and by the destruction of a bone, merely from the pressure of a tumor against it; in which cases the bone must have been taken up by the absorbing vessels and conveyed away; and lastly, this absorption is placed beyond all controversy, by the fatal disease called "mollities ossium;" (softening of the bones;) which in a short time dissolves and carries off, by an excessive action of the absorbents, the bony system; discharging the earthy matter by the kidneys, and gradually rendering the bones soft, till they bend under the weight of the body and may be cut with a knife.

But this vascular nature of bones not only sustains their health by constantly removing and carrying off their wasted and unsound particles, and furnishing them with new ones; but also, by extending to them the circulation in common with the other parts of the body, it enables those useful organs to repair their injuries by uniting such as may be broken. And here we cannot help admiring the beneficence as well as wisdom of the Creator, who thus kindly interweaves, not only with the soft parts of the human machine, but also, with its most hard and solid substances, the means of supplying their waste and of repairing their injuries.

If, for instance, a bone be fractured, its broken ends will unite in the following manner; first, the arteries discharge a thin mucus, which afterwards thickens into a transparent jelly and becomes vascular, by the elongation of vessels from the neighboring parts; these vessels soon begin to secrete the osseous matter, till the whole jelly becomes one bony mass, and thus the fractured ends are completely united. That this desirable result may be the more certain, the formation of new bony matter is not confined to any one part or to particular vessels in the bone; but is generously bestowed upon its entire system; for not only will the vessels of the periosteum, (the membrane covering and lining the bones) produce fresh osseous matter; but so also will those of the bone itself; as will likewise the vessels of the marrow, which is contained within the cavity of the bones. Thus, if by puncturing the bone of an animal we destroy the marrow, the old bone decays, and a new one will be formed from the periosteum; and, should the creature soon afterwards die, and the bone be inspected, it will be found to be a secretion from the inner surface of the periosteum, bearing all the characteristics of true bone, and containing within it the old bone, dead and black. But if this experiment be reversed, and the periosteum only is destroyed, preserving the nutritious vessels of the bone; in this case the new bony matter is formed by the medullary vessels, and the old bone surrounding it, will become black and dead. Lastly, when the knee-pan, where there are no medullary vessels, is fractured, the broken parts are united by the intervention of a callus, secreted from the vessels of the bone itself.

Again, if a bone is injured by blows or other accidents, which derange its economy and damage its structure, the circulation soon repairs the mischief in the following manner. First, inflammation takes place, as in the soft parts of the body; next, a swelling and spongy looseness with a fulness of blood ensue; suppuration and ulceration soon follow; and finally, the diseased bone becomes completely dead, and is discharged from the system.

Bones, besides arteries, veins, and absorbing vessels, have also, like the soft parts, their nerves. These may be discovered entering like small threads into the body of the bone, in company with its nutritious vessels; and yet, notwithstanding we can trace the course of some of these nerves, a bone appears to possess no sensibility. Thus, rasping the periosteum, and even scraping it from the bone, produces no pain. In amputation bones are cut without exciting particular feeling. Even the application of the actual cautery formerly in use, was known to produce only a kind of heat along the course of the bone, not unpleasant to the patient. But it must not

be supposed from these facts that bones are wholly insensible, they are in reality otherwise; but their sensibility being fitted to their functions, is so regulated as not to appear under the generality of those circumstances, which produce it in the soft parts of the body. Hence the shocks from running, leaping, and other violent exercises, cause no sensation in the bones; and which, if otherwise ordered, must have subjected them to almost continued pain, from the numerous blows and other accidents they encounter. The same wise provision is extended to the cartilages, ligaments, and other parts composing the joints, and for the same reason; namely, to prevent the occurrence of pain on every uneasy motion or concussion which these parts are liable to endure.

But though bones exhibit this inaptitude to sensibility, in their healthy state, and on ordinary occasions; this is far from being the case when they are diseased. Injuries will produce inflammation in the bones as well as in the soft parts, and now their hidden sensibility becomes roused, and even surpasses that of the latter, though excited from a like condition. This is also the case with the cartilages, ligaments, and all the other parts in which sensibility appears dull during health. Thus the wound of a joint is certainly less painful at first, but inflammation coming on, the sensibility of the injured parts rises to an excruciating degree; and no pains are felt to equal those arising from bones and joints.

Thus it will be seen that ossification is a process of a truly animal nature; and that bone is a regularly organized substance, whose form subsists from the first. Bone partakes by its vessels of the general changes with all the other parts of the body; the absorbents removing the old wasted parts, while the arteries are constantly depositing new ones; and thus it lives, grows, and is enabled to repair its injuries. Ossification is at first rapid; advances slowly after birth; but is not completed in the human body till the twentieth year; it is forwarded by health and strength of constitution; and is retarded by weakness and disease. In scrofula it is imperfect; and so children become rickety, the bones softening and swelling at their heads, and bending under the weight of the body.

The structure of bones, as may be seen by breaking those old and decayed ones which are found in church-yards, consists of plates made up of fibres, and those plates connected by other fibres; by which formation a great number of interstices or cells are to be met with in the heads of the long bones, while their sides have a more dense, and firm construction.

THE PERIOSTEUM.

The bones are covered with a membrane, called on that account periosteum. It adheres closely to their surface, by small points, which dive into the outward substance of the bones, so that it may bear the pulling of the great tendons, which are fixed rather into the periosteum than into the bone. It is also connected with the bones by innumerable vessels, which are transmitted to them through the medium of this membrane. The periosteum is not itself vascular, and appears to be merely condensed cellular membrane. If, however, it be hurt by injuries, the outer layers of the bone die, because the vessels which nourished and sustained their health, are now destroyed or prevented from continuing their function, by the injury of the membrane through which they passed into the bone. But the internal layers will now set about repairing the mischief. These, being fully nourished by the internal arteries, inflame, swell, become porous and spongy, and form granulations. These granulations, push off the mortified plate, and form themselves into new bone, which supplies its place.

The uses of the periosteum appear to be, to nourish, by the vessels which pass through it, the external layers of the bone; to afford a convenient origin and insertion to several muscles and tendons which are fixed into this membrane; and to prevent, by the looseness of the external surface, friction, in the sliding of the muscles over the bones.

THE MARROW.

The marrow is an oily secretion from the blood, and is lodged in membraneous vesicles or cells, which fill up the larger and smaller cavities within the bones. These minute bags are formed from the membrane which lines the cells within the bones.

The precise use of the marrow is not yet ascertained; but its consistence varies in different periods of life. In infancy it is thin and tinged with blood. It thickens as we advance in life.

The destruction of the marrow, as we before observed, produces the death of the bone in which it is contained; and from the same cause, that injuries of the periosteum will be the means of destroying the external plates, namely the destruction of the vessels; for as the periosteum is the medium by which the external vessels are conveyed to the bone, so the internal ones are conducted to its substance by the membrane containing the marrow, and lining the inside of the bone; whence the marrow being destroyed, the channels for conveying nourishment are cut off, and the bone dies.

LIGAMENTS.

The bones are connected to each other by ligaments, which are strong, white, flexible substances, and but little elastic. They are of two kinds, the round or cord-like ligament, which grows from the head of one bone, and is inserted into that of the other, tying the two bones together; and the capsular ligament, which encloses the whole joint as in a purse or bag, and has numerous arteries opening upon its internal surface, for the purpose of keeping it moist, and of diminishing friction.

CARTILAGES.

But the more effectually to preclude friction and concussion, all the bones forming moveable joints, have their ends covered with plates of cartilage, which being of a solid, smooth, elastic nature, renders all the motions of the joints easy and free from shocks in running, jumping, &c.; and to increase this effect, there are also moveable cartilages interposed between the ends of the bones, in some of the joints.

THE SYNOVIA.

Besides the fluid which the capsular ligament throws out, there are small fringe-like bodies placed within the joints, for securing a constant and copious supply of moisture. They secrete a singularly glairy and slippery liquor called synovia, for lubricating the different surfaces of the joint, and preventing friction in the various motions of the body. After the synovia has performed its office, it is re-absorbed by the absorbent vessels, which arise by open extremities from all the cavities of the body.

OF THE SKELETON OF THE HUMAN BODY.

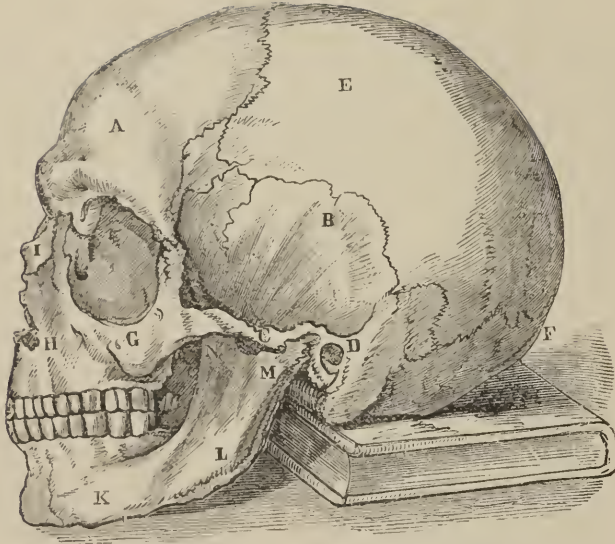
The bones of an animal connected together, after the soft parts have been removed, is called a skeleton; and is said to be a natural one when they are kept together, as in the living state, by their own ligaments; but artificial if they are joined with wire, or any other substance, foreign to the animal.

The human skeleton we shall divide, for the purposes of description, into the head, the trunk, the superior and inferior extremities.

OF THE HEAD.

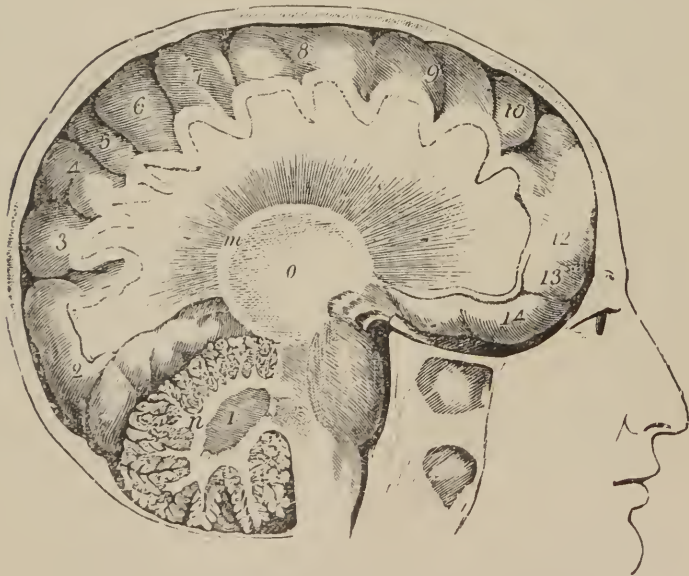
By the head is meant all that part which is placed above the first bone of the neck. It therefore comprehends the bones of the skull and those of the face.

Plate 2.



EXTERIOR VIEW OF THE SKULL. Page 45.

a, Frontal Bone ; b, Temporal Fossa ; c, Zygoma ; d, Masseter ; e, Parietal ; f, Occipital ; g, Molar ; h, Nasal spine ; i, Nasal ; k, Maxillary.



VERTICAL SECTION OF THE BRAIN. Page 82.

n, Lobes of Cerebellum ; 2 to 14, Lobes of Cerebrum.

THE SKULL.

The skull or brain-case consists of eight bones, which form a vaulted cavity for lodging and defending the brain; this great cavity is proportioned to its contents, which is the cause of such variations in its size in different persons; while its roundish figure is chiefly owing to the equal pressure of the contained parts, as they grow and increase, before the skull is entirely ossified; and to the management of the head during this period is to be attributed the difference of shape observable in different nations. Hence from the use of the turban, the head of a Turk assumes a round figure, greatly different from that oblong shape, which characterizes those nations, with whom the turban is not in use.

A more striking instance of the degree in which the human head may be modelled by national customs, is found among the Caribbee Indians, who by flattening the forehead in early infancy, produce a hideous deformity of aspect.

Some of the Faquirs of India are well known for the cone-like shape to which they mould their heads.

The bones of the skull are composed of two tables, and an intermediate lattice-work, nearly of the same structure and use, as that of the other bones. The outer table or plate is the thicker and stronger of the two, being more immediately concerned in warding off injuries of the head.

The eight bones of the skull are the *frontal-bone*, which forms the whole fore-part of the skull; the two *parietal-bones* forming its upper and middle part; the two *temporal-bones* composing the lower part of the sides; the *occipital-bone* making the whole hinder part, and some of the base; the *ethmoid-bone*, placed in the fore-part of the base of the skull; and the *sphenoid-bone* in its middle.

SUTURES.

These bones are joined to each other by what anatomists call sutures, which are indented or dovetailed seams; their uses are not well understood. Some have supposed that they were intended to limit the extent of fractures in the skull; others, that they enable the dura mater, or membrane lining the inside of the head, to suspend itself more firmly, by insinuating its fibres through those sutures, and communicating with the membrane on the outside. But these opinions, with many others, are contested and admit of doubt; and, perhaps, it is more reasonable to believe that sutures are merely a consequence of the mode in which the ossification of the skull takes place, rather than a formation, designed for certain uses. We see

the bones of the skull ossify from the centre towards their circumference, their fibres spreading and extending on every side, till at last those different bones meet, and shooting in between each other, form the suture or serrated line of union. Nature, in the formation of all bones, hastens their ossification, by beginning the process in many points, and she observes this law in healing a broken bone, as well as in forming the skull. Had the process of ossification in the head been confined to one point, it must necessarily have been slow and imperfect, and the brain would have continued a long time exposed to injuries from without. Instead of this, we find a distinct system of ossification going forward at the same time in each of the bones composing the skull, all spreading from their centres, and approaching each other to make one whole, perfect, bony case for lodging the brain. But it should be observed here, that this ossification is not complete for a long time after birth; the bones not having yet sufficiently grown for their edges to meet. The imperfectly ossified state of the skull appears to be better suited to the growing and increasing condition of the brain during this period, than if its ossification had been quite complete; as in this case the flexibility of the skull must be less, and its capacity not so easily enlarged by the increasing bulk of the brain. One beneficial consequence results from the imperfect ossification of the skull at birth, which is too important to omit, and which, perhaps, was the principal aim nature had in view, in adopting this peculiar structure; namely, the opportunity it affords of contracting the size of the head in child-birth. It is almost constantly found that the bones overlap one another very considerably, and lessen the head in both its diameters to a surprising degree.

BONES OF THE FACE.

The face is the irregular pile of bones composing the fore and under part of the head. It constitutes the bony portion of some of the organs of sense, affording sockets or orbits to the eyes, an arch to the nose, and a support to the palate; it also forms the basis of the human physiognomy, and enters into the composition of the mouth. Anatomists, in their description, commonly divide the face into the upper and lower jaws.

It consists of six bones on each side; of a thirteenth placed in the middle, and having no fellow; and of sixteen teeth. The thirteen bones are, viz. the two nasal; two unguar; two cheek-bones; two maxillary bones; two palate bones; two spongy bones of the nose; and the single bone, called the vomer, and which divides the nose.

The two *nasal bones* form the root and arch of the nose.

The two *angular bones*, so called from their resembling the nail of one's finger, constitute the inner angle of each orbit. Each of these bones has a deep perpendicular canal for lodging a part of the lachrymal sac and duct, by which the tears are conveyed into the nose; and it is this bone which is operated upon in the disease called *fistula lachrymalis*, which is an obstruction of the duct, by which the tears, instead of flowing off by the nose, trickle over the face. The operation is performed by piercing the bone with an instrument, which opens an artificial communication with the nose, and the tears are conducted through that channel.

The two *cheek bones* are the prominent square bones, which form the upper part of the cheeks. They constitute a distinguishing feature in the human countenance, as may be seen by comparing the high cheek-bones of the Tartars, and other northern nations, with the more regularly formed countenances of the people of southern climates.

The two *maxillary bones* are the largest, and constitute the far greater part of the upper jaw. They form the most part of the nose, a great portion of the roof of the mouth, and also a considerable share of each orbit; at their lower edge they afford a base and sockets for containing the sixteen upper teeth. Each of these bones has a large hollow in its body, which is lined with a continuation of the membrane of the nose. It is called the maxillary sinus, has a small opening into the nostrils, and is supposed to be intended for raising and making the voice more perfect, by creating a reverberation of the sounds. Sometimes collections of matter form in this sinus, attended with great pain, inflammation, and swelling of the cheek, and even distortion of the face; in this case the matter is discharged by pulling out the second or third of the grinding teeth, and introducing a sharp stilet by the socket of the drawn tooth, then perforating the bony partition, which is here generally very thin, into the sinus.

The *palate-bones* are placed at the back part of the palate or roof of the mouth, and are continued up the back part of the nostrils, to the orbits; forming part of the palate, nostrils and orbits.

The spongy bones are four in number, two in each nostril; they are so named from their porous texture, being rolled into scrolls, and their thin laminae of bone are pierced by many holes, which renders them very light. They are covered with the membrane of the nose, which lines universally all the cavities of this organ. The points of the lower of these bones form those projections which may be felt by the finger, and from the improper practice of picking the nose, very often serious consequences arise; for in many instances polypi of the spongy bones which are fleshy excrescences and which can be traced

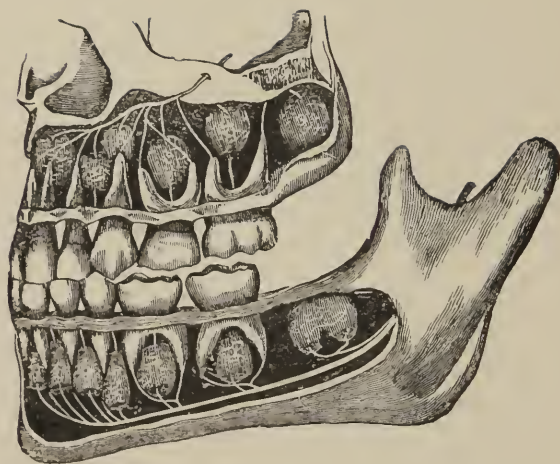
to injuries of this kind, grow so as to extend down the throat, and cause suffocation and death.

The *vomer*, so called from its supposed resemblance to a plough-share, is a thin flat bone; constituting the thirteenth and last bone of the upper face. It forms the lower and back parts of the division of the nose. Its upper edge is united to the base of the sphenoid-bone, and to the nasal-plate of the ethmoid. Its anterior edge has a long furrow for receiving the middle cartilage of the nose; and its lower edge is joined to the maxillary and palate bones. This bone divides the nostrils from each other, and like the spongy bones enlarges the organ of smelling by affording greater space for the expansion of the membrane of the nose.

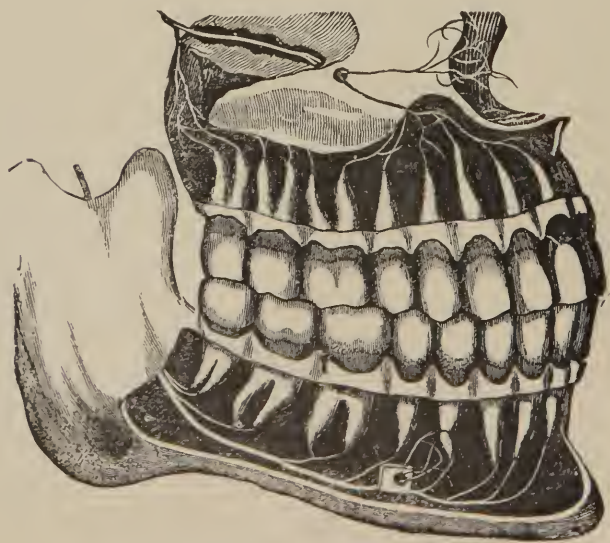
THE LOWER JAW.

The lower jaw consists of only one moveable bone and sixteen teeth. It is nearly of the form of a crescent, or half moon, terminating the outline of the lower part of the face, forming the under part of the mouth, and serving as a frame for holding and working the lower teeth. The fore-part of this bone is termed the chin, from this its sides extend back to what are called the angles of the lower-jaw. Here its base ends, and the bone bends upwards at right angles, to be articulated with the head. From these rising branches shoot out two processes or bony projections on each side; the first is called the coronoid, or horn-like process, and is intended for the convenient insertion of the temporal muscle, the lower end of this muscle being fixed into the whole of that process; and being placed at a distance before the articulation of the jaw, gives the muscle great power in moving it. The other is the articulating process; it lies behind the former, is of an oblong shape, and set across the branch of the jaw. These articulating extremities are received into two large cavities, hollowed out in each temporal bone near the ear, and are connected to these bones, by means of capsular ligaments, which extend from one bone to the other, and enclose the joint as in a bag. Not only the surfaces of the bones composing these joints are covered with cartilage, to prevent friction, but, to render their large and numerous motions more secure and easy, a moveable plate of cartilage is interposed, which plays between the articulating surfaces, and thus facilitates their motions. It is thin in its centre and thickens towards its circumference, by which contrivance the hollow of the joint is deepened, and the hazard of dislocation is lessened. Such moveable cartilages are generally placed in joints where frequent and rapid motion is required.

The sockets of the teeth in the lower-jaw are similar to those of



INFANT TEETH AND RUDIMENTS OF THE PERMANENT. Page 49.



THE PERMANENT TEETH. Page 49.

the upper, but their number and size in both are various, because of the different numbers, as well of the teeth themselves, as of their roots. As the body grows, the jaw-bone slowly increases in length, and teeth are added in proportion, till the jaws acquire their full size, when the sockets are completely filled, the lips are extended, and the mouth is said to be formed. But, in the decline of life, when the teeth fall out, the sockets are reabsorbed and carried away, as if they had never been; then the chin projects, the cheeks become hollow, and the lips fall in, the sure marks of old age.

Fractures of the lower-jaw are more or less transverse, and are known by the falling down of one part of the bone. They happen from blows or falls, but never by pulling teeth, the sockets of the teeth which alone are broken in their extraction, bearing but a small proportion to the rest of the jaw; and even in children this cannot happen, for in them the teeth have no roots, nor any hold or dangerous power over the jaw.

OF THE TEETH.

The teeth of an adult are generally in number sixteen above, and as many below, though some people have more; others, fewer. The part appearing without the socket, is called the base or body, and those parts within, the roots or fangs. These roots become generally smaller towards the end farthest from the base; and are nearly conical, by which the surface of their sides lessens the pressure made by their bases, and prevents the soft parts, at the small points of the sockets, being hurt by such pressure. Each tooth is composed of its enamel, (an extremely hard substance covering the outer surface of the tooth) and an internal bony substance. The enamel has no cavity or place for marrow, and is so extremely hard, that saws or files can with difficulty make an impression upon it. It is thickest upon the base, and becomes thinner towards the extremities of the roots. Its fibres are all perpendicular to the internal substance, and are straight on the base, but at the sides are arched with a convex part towards the roots, which enables the teeth to resist the compression of any hard body between the jaws, with less danger of breaking these fibres, than if they had been situated transversely. The spongy sockets in which the teeth are placed, likewise serve better to prevent such an injury, than a more solid base would have done. The internal bony part of the teeth is of the nature of other bones; like them it is supplied with blood-vessels and nerves, and like them it is subject to the disorders of other vascular parts. Hence, when the enamel breaks or falls off, and the internal part becomes exposed to the air, it soon corrupts and a carious tooth is produced, perfectly hollow within, and

having only a small hole externally. The vessels and nerves enter by a small opening placed a little to the side of each root, and thence descend to be lodged in canals formed in the middle of the teeth; here they are employed in replacing the waste constantly made by the friction they undergo in mastication.

The teeth are commonly divided into three classes, viz: the incisores, canini, and grinders or molares. The incisores, so called from their use in cutting the food, are the four teeth in the fore-part of each jaw. The canini derive their name from their resemblance to a dog's tusks. They are the longest of all the teeth, are placed one on each side of the incisores, so that there are two canini in each jaw, which seem to be intended principally, not for dividing or grinding like the other teeth, but for laying hold of substances. The grinders, of which there are ten in each jaw, are so named, because from their shape and size they are fitted for grinding the food. Each of the incisores and canini is furnished only with one fang; but in the molares of the under jaw, we constantly find two fangs, and in those of the upper jaw, three fangs.

This structure and arrangement of all the teeth displays a wonderful degree of art. To understand it properly, it will be necessary to consider the under jaw as a kind of lever, with its fixed points at its articulations with the skull; that this lever is worked by its muscles; and that the aliment constitutes the object of resistance to its elevation. Thus it will be seen, that the grinders, from being placed nearest the centre of motion, and from their uneven surfaces, are fitted for the purpose of grinding food; while the canini and incisores, being placed farther from this point, from the sharpness of their edges, which overlap each other as the blades of scissors do, are particularly adapted to cut and tear the food.

There are examples of children who have come into the world with two, three, and even four teeth; but these examples are very rare; and it is seldom before the seventh, eighth, or ninth month after birth, that the incisores, which are the first formed, begin to pass through the gum. The symptoms of dentition, however, in consequence of irritation from the teeth, frequently take place in the fourth or fifth month. About the twentieth or twenty-fourth month the canini and two grinders make their appearance. The symptoms are more or less alarming, in proportion to the resistance which the gum affords to the teeth, and according to the number of teeth, which may chance to seek a passage at the same time. Were they all to appear at once, children would fall victims to the pain and excessive irritation; but nature has so very wisely disposed them, that they usually appear one after the other, with some distance of time between each. The first

incisor that appears is generally in the *lower jaw*, and is followed by one in the upper jaw. Sometimes the canini, but more commonly one of the grinders, begin to pass through the gum first. These twenty teeth, viz. eight incisores, four canini, and eight grinders, are called temporary or milk teeth, because they are all shed between the age of seven and fourteen, and are succeeded by what are called the permanent or adult teeth; and which are of a firmer texture, and have longer fangs. These adult teeth being placed in a distinct set of sockets, and the upper sockets being gradually removed as the under ones increase in size, at length the temporary, or upper teeth, having no longer any support, fall out. To these twenty teeth, which succeed the temporary ones, twelve others are afterwards added, viz. three grinders in each side, in both jaws; and in order to make room for this addition, we find that the jaws gradually lengthen in proportion to the growth of the teeth; so that with twenty teeth they seem to be as completely filled, as they are afterwards with thirty-two. This is the reason why the face is rounder and flatter in children than in adults. In extreme age the teeth drop out, their sockets are removed also, and the face again shortens.

With regard to the formation of the teeth, we may observe, that in a fœtus of four months the alveolar process appears only as a shallow longitudinal groove, divided by minute ridges into a number of intermediate depressions; in each of which we find a small pulpy substance, surrounded by a vascular membrane. This pulp gradually ossifies, and its lower part is lengthened out to constitute the fang. When the bony part of the tooth is formed, its surface begins to be incrustated with the enamel. The rudiments of some of the adult teeth begin to be formed at a very early period, for the pulp of one of the incisores may generally be perceived in a fœtus of eight months, and the ossification commences soon after birth.

THE BONE OF THE TONGUE.

There is a small bone, nearly of the figure of the lower-jaw bone, and which though not classed with those of the head or trunk, yet as being situated near to the head, we shall describe before we come to those of the trunk. This bone corresponds in place with the chin, below which, about an inch, it may be felt, the uppermost of the hard points in the fore part of the throat; where being placed horizontally, it lies immediately between the root of the tongue and the upper part of the wind-pipe, and carries upon it a valvular cartilage, for shutting the passage and preventing any thing getting down this tube; while its legs extend along the sides of the throat, keeping the openings of the wind-pipe and gullet extended, as we would keep a bag extended

by two fingers. This bone is the centre of the motions of the tongue, for it is the origin of those muscles which compose chiefly the bulk of the tongue; of the motions of the wind-pipe, for it forms at once the top of the wind-pipe and the root of the tongue, and joins them both together; of the motions of the gullet, for its legs surround the upper part of the gullet, and join it to the wind-pipe; and it also forms the centre for all the motions of the throat in general; for muscles come down from the chin to this bone, to move the whole throat upwards; others ascend from the breast, to move it downwards; while different muscles come from the sides to move the throat backwards. This bone is called the *os hyoides*.

OF THE TRUNK OF THE HUMAN BODY.

The Trunk of the Human Body Comprises the Spine, the Pelvis, and the Thorax, or Chest.

THE SPINE.

The spine or back-bone is that long chain of bones which extends from the skull to the end of the loins. It consists of twenty-four distinct bones named *vertebræ*, from the Latin word *vertere* to turn; because they perform at certain points the chief turnings and bendings of the body. They also form a tube or canal along the whole length of the spine, for lodging and defending from harm the spinal marrow; and they support the whole weight of the trunk, head, and arms, without suffering under the longest fatigue, or the greatest load which the limbs can bear. Hardly any thing can be more beautiful or surprising than this mechanism of the spine, where nature has established the most opposite and inconsistent functions in one set of bones; for their motions are so free as to turn continually, yet so strong as to support the whole weight of the body; and so flexible as to bend quickly in all directions, yet so steady within as to contain and defend a material and very delicate part of the nervous system.

The *vertebræ* are divided into those of the neck, back, and loins, and the number of pieces corresponds with the length of these divisions. The *vertebræ* of the neck are seven in number; their form is simple, they being almost like rings, their processes scarcely project; they are very loose and free; and their motions are the widest and easiest of all the spine. The twelve immediately below these are the *vertebræ* of the back; they are larger and stronger than the

former, and their processes project obliquely downwards, so as to be laid over each other; hence one bone is fastened to the other, which, together with their connection with the ribs, renders this the steadiest part of the spine, and allows it only a very limited motion. The vertebræ of the loins are the next and the last; they are five in number; they bear the whole weight of the body, and perform the chief motions of the trunk, and with this view, nature has made them the largest and strongest of the entire vertebræ, and given them a wide and free arrangement of their processes.

The form of each vertebra is particularly calculated for producing the different uses of the spine, and displays at once the astonishing designs and execution of the Supreme Architect. The spine is intended as a support to the trunk, head, and arms; for this purpose each vertebra is composed of a main part, called its body, which is a thick, spongy, and therefore light bony substance, convex before, concave at the back part, and almost horizontal upon its upper and under sides, when it is joined to similar bodies of the other vertebræ. All these bodies are connected together, like the sections of a large cane, and constitute a bony pillar for sustaining the upper parts of the body. But, besides support, these parts require motion; hence, this pillar is furnished with all the means of producing it. First, then we see it divided into many pieces; having a perfectly elastic substance interposed between every two bodies, and which by easily yielding to whatever side we bend, and afterwards, by a powerful rebounding returning to its place in a moment, takes off pressure from the delicate nervous column, and thus preserves it from injury in the violent and sudden motions of the body. During the day this elastic substance is continually yielding to the pressure, so that we are an inch taller in the morning than at night; we are shorter in old age than youth; and the aged spine is bent forwards, owing to the yielding of this part.

Next, we observe projections standing out from the back-part of the spine for different purposes. The first are the articulating processes, of which the body of each vertebra furnishes four. They grow out obliquely, two from the upper and two more from the under part of each body, and incline towards those of the other vertebræ, till they meet to be articulated; when they serve the double purpose of fastening together, and securing, in conjunction with the intervertebral substances, the different pieces of the spine; and also, by affording so many moveable joints, of assisting in its motions.

From between these superior and inferior articulating processes, the body of each vertebra sends out two arms, which meeting behind form an arch or canal for the spinal marrow; and from the middle

of that arch, and opposite to the body, another process, called the spinous projects. These processes have their direction backwards, and from the sharpness of their points, which form the ridge of the back, give the name of spine to the whole column. They are intended to serve as so many handles and levers for moving the spine; their size enabling the muscles to take a firm hold, while their length gives those muscles a powerful force in extending and raising the spine. But, beside these, there are other processes, which, from their direction, are called transverse processes, because they stand out at right angles, or transversely, from the body of the bone. They grow out from the sides of the arms or branches which form the arch for the spinal marrow, and are two in number to each vertebra. They also serve as levers, and long and powerful ones, in moving and turning the spine.

Thus we see that each vertebra consists of a body and seven processes; but it must be understood, that this is not the case with all the vertebræ. As we observed before, the vertebræ of the neck are very indistinctly marked, and the first two materially differ from the general character, for the purpose of adopting a most beautiful piece of mechanism.

The first vertebra of the neck is named atlas, from the globe of the head being immediately placed upon it. Its processes are scarcely distinguishable; it has no body; and is simply a ring, through which the spinal marrow passes from the great hole of the skull into the rest of the tube, formed for its reception. The atlas is articulated at two points, one on each side, with the occipital bone of the skull, and these joints being strictly hinge-like, enable the head to move backwards and forwards, but allow it no motion to either side. This motion, called the rotatory, is performed by means of a tooth-like process, which rises from the upper part of the body of the second vertebra of the neck, and which forms the chief characteristic of that bone. This process is about an inch in height, resembling in some degree the little finger; stands perpendicularly upwards, passing through the ring of the atlas, and serves as an axis, on which this bone, and with it the head may perform all the rotatory motions. It is confined by ligaments, one of which connects its front with the edge of the occipital hole, and the other, extending from one side of the atlas to the other, embraces the tooth-like process, and prevents its injuring the spinal marrow. When this ligament is burst by violence (as has happened) the tooth-like process breaks loose, and pressing upon the spinal marrow, the person dies.

All the vertebræ conjoined, make a large canal of a triangular or roundish form, for lodging the spinal marrow, and which, as it descends,

gives off its nerves to the neck, arms, and legs; and the whole course of this canal is rendered safe and smooth by lining membranes, which serve the double purpose of connecting the different bones together, and of affording a soft and easy sheath to the marrow.

Thus we see that a vertebra consists of different parts, all admirably suited to produce their various purposes. Its body helps to form the pillar for sustaining the upper parts of the frame. The intervertebral cartilages, which are placed between the different bodies, being of a highly elastic nature, admit motion and prevent concussion; while the numerous processes, which grow out from the bone behind, act as so many handles and levers, by which the muscles move and work the spine; and also serve to form the tube or canal for containing the spinal marrow.

OF THE PELVIS.

To give a steady bearing to the trunk, and to connect it with the lower extremities, by a sure and firm joining, the pelvis is interposed. It is a circle of large and firm bones, standing as an arch betwixt the lower extremities and the trunk. Its arch is wide and strong, so as to give a firm bearing to the body. Its individual bones are large, so as to give a deep and sure socket for the implantation of the thigh-bone. Its motions are free and large, bearing the trunk above, and rolling upon the thigh-bones below; and it is so truly the centre of all the great motions of the body, that when we believe the motion to be in the higher parts of the spine, it is either the last vertebra of the loins bending upon the top of the pelvis, or the pelvis itself rolling upon the heads of the thigh-bones.

The pelvis, is constructed, in the adult, of four large bones, viz of the os sacrum behind, the ossa innominata on either side and before, and the os coccygis below.

The os sacrum or hinder bone is the base, on which the spine, and consequently the whole body, rests, its upper surface being articulated with the under one of the last vertebra of the loins. It is of an irregular triangular shape, broad above for supporting the trunk; narrow below: convex behind; and concave before; it guards the nerves proceeding from the end of the spinal marrow, and also forms the back part of the pelvis. Within this bone, there is a triangular cavity, which is a continuation of the canal of the spine. Here the spinal marrow ends, and branching into a great many thread-like nerves, has the form of a horse-tail, and is therefore named *cauda equina*. These nerves afterwards go out by five great holes, which are on the fore-part of the bone, to be distributed to different parts.

The *os coccygis* is a continuation of, or rather an appendage to,

the sacrum; it consists of four bones in the middle age, each bone becoming smaller, as it descends, till the last ends almost in a point, and by bending inwards serves to contract the lower opening of the pelvis, so as to support effectually the viscera within. These two bones, the sacrum and coccygis, are described by most anatomists as parts of the spine, and certainly not without reason. They are a continuation of that chain of bones, and perform some of their functions; supporting, like them, the weight of the body, lodging the spinal marrow, and transmitting some of its nerves; but as they are precluded motion, and are closely locked in between the other bones of the pelvis, so as to constitute a principal share of this basin, at its hinder part, we think it advisable to class them as bones of the pelvis in the description.

The sides and fore-part of the pelvis, as we before observed, are composed of two bones, which correspond in size and figure with each other, but, being of a most irregular shape, are called the ossa innominata, or nameless bones. In children each of these bones consists of three separate pieces, which afterwards, when greater strength is acquired, and ossification is become more perfect, are so firmly united as to form but one bone; still these bones continue to be described as though each consisted of three pieces.

The os ilium, or haunch-bone, is the highest, constituting each upper side of the pelvis, and has its posterior edge firmly and immovably articulated to that of the os sacrum. It forms the flank, and is the largest division of the os innominatum.

The os ischium, or hip-bone, lies perpendicularly under the former, and is the lowest point of the pelvis, upon which we sit.

The os pubis, or share-bone, is the last and smallest piece of the three, forming the fore-part of the pelvis, and completing its brim.

Each os innominatum has a cup-like hollow for the head of the thigh-bone to move in. It is formed at that part where the three original pieces, which we have described, meet, to form one bone, and is called the acetabulum, from its resemblance to a measure which the ancients used for vinegar.

The pelvis is intended for many great purposes in the human frame; first, it is the base for supporting the superior parts of the body; next, it is so constructed as to receive into its sockets, and to roll upon the heads of the thigh bones, by which means it connects the lower extremities with the upper parts of the frame, without precluding motion; and, lastly, by forming a kind of basin at the lower end of the trunk of the body, it helps to sustain its viscera; while its outside surfaces, its ridges, and projecting points, serve as so many convenient places for the origin and insertion of numerous muscles,

which, having one of their extremities fixed into the pelvis, as into a kind of circular basis, perform, by means of it, with the advantage of a lever, some of the motions of the trunk, and many of those of the lower limbs. The male pelvis differs from the female, in being much thicker, and more rough, and its cavity being less.

OF THE THORAX.

The thorax or chest is that large cavity reaching from the neck to the lower end of the breast-bone before, but extending further downwards at the back, and including all that space which lies between the opposite ribs. It is intended to afford a secure and commodious residence for the heart, lungs, &c., and is formed, behind, by the twelve dorsal vertebræ of the spine; at the sides, by the ribs; and by the breast-bone, before.

THE RIBS.

The ribs form the sides of the chest, covering and defending the heart and lungs. They also assist in breathing, being joined to the spine by regular hinges which allow of short motions, and to the breast-bone by cartilages, which yield to the motion of the ribs, and return again by means of their elastic nature, when the muscles cease to act. They are generally twelve in number on each side, though frequently eleven or thirteen have been found. Those whose cartilages are separately inserted into the breast-bone are called the true ribs, and are seven in number, while the five lower ones, whose cartilages do not reach that bone, but run into each other, and are joined to it by a common cartilage, are designated by the name of false ribs. The lower edge of each rib is furrowed along its internal side for the safe passage of the vessels and nerves between the ribs; and, to the ridge, at each side of this canal, are fixed the double rows of muscles, which lie between the ribs.

THE STERNUM.

The sternum, or breast-bone, is commonly composed of three bones, joined together by cartilages. It extends from the upper to the lower part of the breast anteriorly, and has the ends of the ribs and collar bones articulated with it, by which the cavity of the chest is completed, as far at least as the bones are concerned.

This bone, the ribs, and indeed all the chest, stand so much exposed, that did we not guard them with the hands, fractures must be very frequent; but, when they are broken and beaten in, they hurt the heart or lungs, and not unfrequently the most dreadful consequences ensue. Often, by a wheel passing over the body, the breast-

bone is broken; its pieces press inward upon the heart, which is sometimes burst; but more commonly the patient dies a slow and painful death; for the inflammation, which begins in the place of the wound is extended to the lungs, and propagated still onwards to the heart; which, being once inflamed, brings on anxiety, oppression, faintings and palpitations; then anxious breathing, quick and interrupted pulse, still more frequent faintings, and lastly death. But the ribs, covering more properly the lungs, do not always produce death by their fractures, for the wound by the point of a rib is no deeper than just to puncture the lungs; yet through this small wound on their surface, the lungs breathe out their air into the cavity of the chest, and at last it escapes under the cellular substance of the skin, when the man becomes exceedingly inflated, his breathing more and more interrupted, and, if not assisted, he must die.

Having now described the bones which form the trunk of the body, we next come to those of the limbs, and first to the bones composing the upper limbs.

THE SUPERIOR EXTREMITIES.

Each Superior Extremity consists of the Shoulder, Arm, Fore-arm, and Hand.

THE SHOULDER.

The shoulder includes two bones, the clavicle and scapula. The clavicle or collar-bone is placed at the root of the neck, and at the upper part of the breast. It lies almost horizontally, and extends across from the tip of the shoulder to the upper part of the breast-bone. Its figure is long, round, and curved like an italic *S*, and serves the shoulder as a kind of arch, supporting and preventing it from falling in and forwards upon the breast, by which the motions of the arms would be confined, and the chest made narrow, which must be the case, were these bones wanting. The collar-bones also make the hands strong antagonists to each other, which otherwise they could not be.

The scapula, or shoulder-blade, is the other bone of the shoulder. It is a broad, flat, triangular bone placed upon the outside of the ribs, and serving as a base to the whole superior limb. Its under side is somewhat concave, to match the convexity of ribs, yet it is not in immediate contact with them, but is separated from them by several layers of muscular flesh; so that this bone may glide upon the trunk, and increase the motion of the limb which is suspended

from it. For this reason the scapula is not jointed with any bone of the trunk, or connected to it by ligament, as such connections must impede the freedom of its motions; but it is securely held to the trunk by those very muscles which perform its movements. The arm-bone is jointed with the scapula, at one of its angles; this angle terminates in a flat surface, not more than an inch in diameter, for receiving the head of that bone; and, as it is very shallow, dislocations of the shoulder are more frequent than of any other joint. A high ridge called the spine, rises from the back or external surface of the scapula, and traversing its whole length, runs forward to terminate in that high point or promontory which forms the tip of the shoulder and overhangs and defends the joint. This projecting point of the scapula is called the acromion process; it almost makes a part of the shoulder joint, preventing dislocation upwards; and is the part which is jointed with the collar-bone. There is also another process which stands out from this angle of the scapula, and is intended to secure the joint, and prevent dislocation likewise. It is a thick, short, but crooked process, and is adapted to defend the joint at its inner side. But the principal strength of this union of the joints arises from the muscles, which, passing from the shoulder-blade over the joint, are inserted into the arm-bone close to its head. These muscles in their passage, closely embrace the head of the arm-bone, adhere to the capsular ligament which encloses the joint; and, by spreading themselves over it, thicken and increase its strength. They also by their contraction hold the arm-bone in its place.

The shoulder-blade, as we before observed, is not fixed, but moves upon the trunk; it therefore serves as a moveable intermediate base to the whole arm which hangs from it. For this purpose it is firmly held to the trunk by numerous and strong muscles, which can move it in various directions, and, by a quick succession of these movements, can carry its whole body in a circle, by which greater scope is given to the motions of the arm. This bone also serves to cover and defend the back-part of the chest.

THE ARM.

The arm is commonly divided, in the description, into two parts, which are joined with each other at the elbow. The upper part, or os humeri, retains the name of arm, properly so called, and the lower part is usually termed the fore-arm.

The arm, then, is that division extending from the shoulder to the elbow. It has only one bone, which is long, round, and nearly straight, and which is united at the shoulder by its round head being

received into the hollow of the shoulder-blade, and connected thereto by ligaments, which enlose the whole joint as in a bag. But that this joint may have the freest motion, the hollow for receiving the arm-bone is extremely shallow, so that its round head might easily turn in all directions; and the connecting ligaments, for the same reason, are longer than in other joints. Then, as in all other moveable unions of the joints, not only is the head of the arm-bone tipped with cartilage, but the surface of the cavity into which it is received is also lined with the same substance, for the purpose of preventing concussion and friction; and the more effectually to preclude the latter, an oily fluid is constantly moistening the whole internal surfaces of the joint, and is supplied from the inner side of the capsular ligament, and also from soft, spongy substances, which are placed within the joint. The lower end of the arm-bone is connected with those of the fore-arm, at the elbow, carrying them with it in all its motions, and serving as a base on which they perform their peculiar movements.

THE FORE-ARM.

The fore-arm is composed of two bones, viz. the ulna and the radius. The ulna is the longer of the two bones, and is extended from the wrist on the side of the little finger to the point of the elbow, where it assumes a hook-like form; the concave side of which being fitted to the pulley-like surface of the lower end of the arm-bone, produces the motions of flexion and extension, so that the fore-arm may be bent to a very acute angle, or extended to almost a straight line with the arm.

The radius is the second bone of the fore-arm. It is but partially articulated (i. e. jointed, or joined) with the end of the arm-bone, and has its position reversed with that of the ulna; for the ulna, belonging principally to the elbow, has its greater end upwards; the radius, principally belonging to the wrist, has its greater end downwards; and while the ulna only bends the arm, the radius carries the wrist with a rotatory motion, and for this purpose it is so articulated with the ulna at the ends, (the only points where these bones meet) that it turns upon it in half circles. The two bones are connected together along their whole length by a strong ligament, which extends from one to the other, filling up the vacant space between them, and rendering their position the more secure. The radius is hollowed at its lower end for receiving the bones of the wrist in articulation, but the ulna does not reach quite so far as to come in contact with those bones.

THE HAND.

The hand comprehends all from the joint of the wrist to the ends of the fingers. Its back-part is convex for greater firmness and strength; and it is concave before for containing more conveniently such bodies as we take hold of.

Anatomists generally divide the hand into the carpus, or wrist-bones; the metacarpus, or bones that stand upon the wrist, and serve as a basis to the fingers; and the fingers, consisting, each one, of its three joints.

The carpus, or wrist, is composed of eight small bones, disposed in two rows. Those of the upper row form an oblong head, to be articulated with the cavity of the radius of the fore-arm, so as to allow motion on all sides; and, by a quick succession of these motions, the hand may be moved in a circle. The lower row is articulated with the bones of the metacarpus, to which they serve as a solid foundation or centre. These small bones are firmly tied to each other by strong ligaments. There are two in particular which deserve notice; one is situated on the external, and the other on the internal, side of the wrist, and both not only help to strengthen the parts on which they lie; but also confine, and serve as smooth lubricated sheaths to the tendons which pass under them.

The metacarpus consists of four long round bones for sustaining the fingers. They are founded upon the wrist bones; but, departing from them as from a centre, in somewhat of a radiated form, they allow the fingers a freer play. These bones are connected to each other by plain surfaces, and are tied at their lower ends by ligaments, which prevent their being drawn asunder. Consequently they have not a large motion.

THE THUMBS AND FINGERS.

The thumb and four fingers are each composed of three bones. The thumb is placed obliquely with respect to the fingers, and its bones are thicker and stronger than those of the former; which is necessary, as the thumb is intended to counteract all the fingers. All the bones of the fingers are placed in three rows, called phalanges. The first phalanx is articulated with the bones of the metacarpus, and consists of the largest bones; the second stands out from the first; and the last grows out from the second and completes the fingers. These different bones composing the fingers are all regularly jointed with each other, and in such manner as to allow not only a hingelike but also a rotatory motion.

THE INFERIOR EXTREMITIES.

Each of the Lower Extremities comprises the Thigh, the Leg, and the Foot, and has a great analogy in the structure and distribution of its parts with the Upper Extremities.

THE THIGH.

The thigh, like the arm, has only one bone, which is the longest in the whole body, and the largest and strongest of all the round bones. Its upper end inclines inwards, and swells into a large, smooth, round head, to be articulated with the cavity, which is afforded by the side bones of the pelvis. Just below this head the bone becomes small, whence this part is called its neck. The articulation of the thigh-bone with the trunk is secured by strong ligaments; the first is almost peculiar to this point, and is called, from its shape, the round ligament. It grows out of the articulating cavity, and is inserted directly into the head of the bone. The other is the capsular ligament, which, arising from the rim of the articulating cavity of the pelvis, passes over the whole joint, embraces the head of the thigh-bone as in a purse, and is inserted into this bone at its neck. The body of the thigh-bone continues thick and strong down to its lower end, where it spreads with two great protuberances, called condyles, to be articulated with the bones of the leg. This bone not only serves as a fixed point for performing several motions of the trunk, which it sustains like a pillar, but it also affords a base for the leg to carry on its own motions, and is principally concerned in walking, running, &c.

THE LEG.

The leg is composed of three bones; two long ones, called tibia and fibula; and a small one placed at the knee.

The tibia is the long triangular bone at the inside of the leg; it runs nearly in a straight line from the thigh-bone to the ankle, supporting the whole weight of the body, and has its upper end expanded into a large surface for receiving the lower end of the thigh-bone, and forming the knee-joint. This articulation admits flexion and extension, and is secured by very strong ligaments; to compensate for the weakness of its bony structure, arising from the flatness of the articulating surfaces; the joint not being protected as in other cases by a ball and socket, by a large head imbedded in a deep cavity, by over-hanging bones, or by hook-like projections, all which were contrivances ill adapted to its motions. In this instance the strength and complexity of the ligaments are the resources which have been

elected. At the sides of the joint the capsular ligament is peculiarly strong. The contrivance of a ligament within the cavity of the joint, and directly connecting the two bones, is improved upon by a striking adaptation to the necessities of the case. Instead of one, there are two such ligaments which cross each other, and hence are named "crucial (or cross) ligaments;" and by a varied tension of each in different positions of the joint, they check its motions and secure its safety.

This, however, is not all that is admirable in the mechanism of this curious joint. On the top of the tibia are placed two moveable cartilages of a crescent-like form. Their outward edges are thick, while their inward borders are extremely thin, and they thus form a hollow, in which the protuberances of the thigh-bone play with security, and with a facility that is much increased by their loose connections.

Hence, although this joint be the most oppressed by great loads, and the most exercised in continual motions, yet it is less frequently displaced than any other. The lower end of the tibia is articulated with the foot and forms the inner ankle.

The fibula is a long slender bone placed at the outside of the tibia. Its head is connected to that bone by ligaments, but does not reach high enough to enter into the composition of the knee-joint; it lies along-side the tibia, somewhat like a splint, increasing the strength of the leg, and like the double bone of the fore-arm, also completing its form. This bone descends to the foot, where it forms the external ankle, and is connected to the tibia, along its whole length, by a broad thin ligament, similar to that which is found between the bones of the fore-arm.

The knee pan is the third and last bone of the leg. It is a small thick bone, of an oval, or rather triangular form. The base of this triangle is turned upwards to receive the tendons of the great muscles which extend the leg, the pointed part of this triangle is turned downwards, and is tied by a very strong ligament to the upper part of the tibia, just under the knee. The patella, or knee-pan, is intended as a lever; for by removing the direction of the muscles of the leg farther from the centre of motion, it enables them to act more powerfully in extending the limb. To facilitate its motions, its internal surface is smooth, covered with cartilage, and fitted to the pulley of the thigh-bone, upon which it moves.

THE FOOT.

The foot, like the hand, is divided into three parts, viz. the *tarsus* or instep, the *metatarsus*, and the toes.

The tarsus or instep is composed of seven bones, firmly bound together by strong ligaments ; and forming a sure and elastic arch for supporting the body. The uppermost of these bones, called the *astragalus*, is articulated at its superior surface with the bones of the leg in such manner, as to afford the motions of flexion and extension in the ankle joint ; while the sides of this bone are overlapped by the two processes which descend from the tibia and the fibula, to form the internal and external ankles so completely, as to secure the joint from dislocations. The astragalus is joined below to the *os calcis*, and serves as the immediate base for supporting the bones of the leg. The *os calcis* or heel-bone is the largest of the seven bones. Behind, it projects, forming a large knob, called the heel, for receiving the insertion of the tendon of Achilles.* It is situated under the astragalus, with which it is so firmly connected as scarcely to admit motion, but which renders this principal part of our base, which rests on the ground, secure and firm. Its lower surface is pressed flat at the back-part, by the weight of our bodies, this bone being the basis of the whole frame.

The tarsus or instep is convex above, but leaves a concavity below for lodging safely the several muscles, tendons, vessels, and nerves, that lie on the sole of the foot ; and being composed of several bones, all having slight movements with each other, and firmly tied together by ligaments, so as to prevent dislocation, is well adapted to afford sufficient elasticity for precluding shocks in walking, running, or the other motions of the body ; and also for security against fractures, to which it would have been liable had the tarsus been composed of only one bone.

The *metatarsus* is composed of five bones, which correspond in their general character with the metacarpal bones of the hand ; but are longer, thicker, and stronger than the latter. The bases of these bones rest upon the instep ; while their extremities support the toes, in like manner as the metacarpal bones sustain the fingers. When we stand, the fore-ends of these bones and the heel-bone are our only supporters.

THE TOES.

- Each of the toes, like the fingers, consists of three bones, except the great toe, which has only two bones. Those of the other four are

* Grecian fable tells us that Achilles, when an infant, was dipped by his mother in the river Styx to render him invulnerable. The heel was not dipped because she held him by this part ; there he was wounded. From this story is derived the name tendo-Achillis.

distinguished into phalanges. In walking the toes bring the centre of gravity perpendicular to the advanced foot.

THE SESAMOID BONES.

There are small bones found in different parts of the human body, and which, from their resemblance to the seed of the *sesamum*, obtain their name. They are nothing more than portions of the ligaments of joints, or of the tendons of muscles become bony by pressure; and are uncertain both in their number and situation.

RETROSPECT OF THE SKELETON.

When the bones of an animal are connected together, after the soft parts have been removed, the whole is called a skeleton. Upon its dimensions depend the height, and, in a great measure, the breadth, and strength of the human body. Had this frame been constructed of fewer bones, our actions must necessarily have been rendered constrained, and less convenient. It is therefore wisely divided into numerous pieces, for enlarging the sphere of motion; while all its divisions are peculiarly and admirably fitted to the various uses for which they have been designed.

The head, as we have seen, forms a spheroidal case for lodging and defending the brain within its cavity. In the head, and contiguous to the emporium of sense, we also find organs of sight, hearing, smelling, tasting, and speech; the more rapidly to transmit information to the brain, and also to obey its commands.

From the head, we see descending a large chain of bones, called the spine, or back-bone, and reaching down to the extremity of the pelvis. This bony pillar not only supports the head, and superior parts of the body, but also affords a canal along its descent for safely lodging that continuation of the brain called the spinal marrow; and being divided into several small bones, connected together by elastic substances, and having a great number of processes projecting like so many small handles, for the muscles to take hold of and work by, it allows the neck, back, and loins, a sufficient motion.

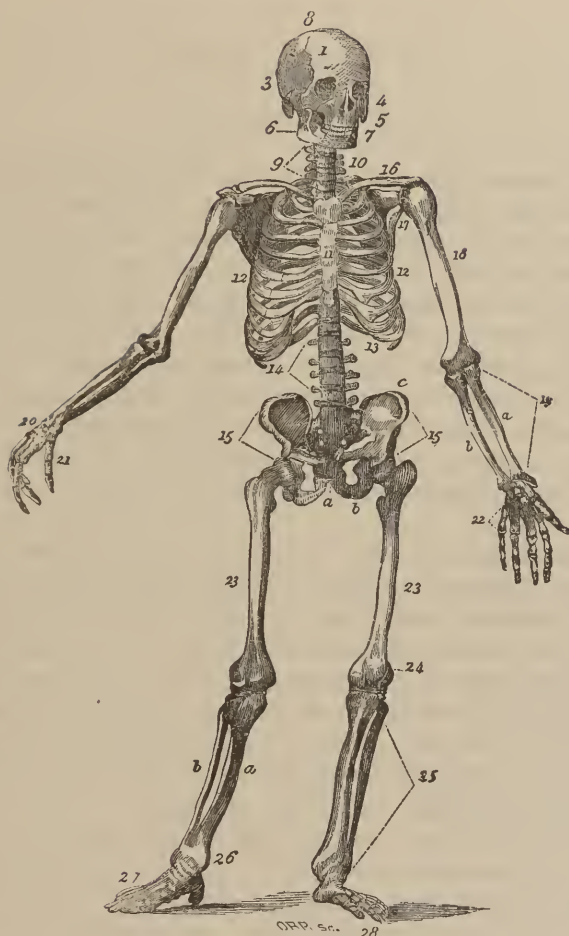
From the upper part of the spine, the ribs extend out on each side, and meeting at the breast-bone before, they form the cavity of the chest for lodging and defending the heart, and the organs of respiration.

The lower part of the spine, supporting all the parts of the body which are superior to it, is itself received in a wedge-like form, and supported by the bones of the pelvis. These bones are so constructed as to serve at the extremity of the trunk not only as a kind of basin, for sustaining some of its viscera, as the intestines, &c. but also, as

a medium of connection between the body and the lower extremities, affording a firm and safe support to the former, and producing the necessary motion at the hip-joints, by rolling upon the round heads of the thigh-bones.

In viewing the superior extremities, we observe that the base of each is placed in a situation, the best calculated for the limb to perform all its motions, and at the same time to defend from injuries the head and chest; while the muscles which are necessary to work the limb, serve as a defence and covering to the vital parts within the ribs. The division of each extremity into several bones, and their peculiar connection, are intended to produce large motion; that, at the shoulder, is sufficiently free for describing a circle; at the elbow the arm may be bent to an acute angle, whilst the wrist is capable of much motion; as are the thumb and fingers; the whole limb producing a collective motion sufficiently great for all the purposes of necessity and convenience.

The inferior extremities we also see divided into several bones, and for the purposes of motion; but, serving as two moving columns for the support and carriage of the rest of the body, they are necessarily stronger, and their joints firmer and more confined. Hence the thigh-bone has less motion than that of the arm; the joint of the knee is stronger than that of the elbow; and the motion of the ankle and toes is slower, but more firm than that of the wrist and fingers.



EXPLANATION OF FIGURE I.

HEAD AND NECK.

1. The Frontal-bone.
2. Parietal-bone.
3. Temporal-bone.
4. Cheek-bone.
5. Upper Jaw.
6. Lower Jaw.
7. Teeth, imbedded in their bony cavities formed by the alveolar processes.
8. One of the Sutures separating the Bones of the Head; the Coronal.
9. Vertebrae of the Neck.
10. The Transverse Projections from the Vertebrae for the attachment of Muscles.

THE TRUNK.

11. The Sternum or Breast-bone.
12. The Ribs, 7 true and 5 false Ribs.
13. Their Cartilages, connecting them with the Sternum, and which replace the Ribs, by their elasticity, when they are elevated by inspiration.
14. The Vertebrae of the Loins with their transverse Processes.
15. The Bones of the Pelvis; the Sacrum is a broad

base to the central pillar of the body; the Osses Innominata, are seated at the sides and the fore-part of the Pelvis; they are divided into *a*. The Pubis.—*b*. The Ischium —*c*. The Ilium.

UPPER EXTREMITY.

16. The Clavicle or Collar-bone.
17. The Scapula or Blade-bone.
18. The Humerus or Arm-bone.
19. The Bones of the Fore-arm.
a. The Radius, on which the Arm turns.—*b*. The Ulna.
20. The 8 Bones of the Carpus or Wrist.
21. The Bones of the Thumb.
22. The Metacarpus, forming the Palm, the back of the Hand, and the Finger-bones.

LOWER EXTREMITY.

23. The Thigh-bone.
24. The Patella or Kneecap.
25. The Bones of the Leg.
a. The Tibia.—*b*. The Fibula.
26. The Inner Ankle formed by a projection of the Tibia.
27. The Metatarsus.
28. The Toes.

OF THE MUSCLES.

GENERAL DESCRIPTION.

Those organs which move the bones, and put the whole frame into motion, are called muscles, and constitute all that part of the human body known by the name of flesh. Each large muscle consists of two distinct portions, namely, its belly, which is the only part that is active, and its thin cordy fibrous and shining extremities, or tendons. The only purposes of the last are to fix the muscles to the moveable parts in a concentrated form; in consequence of which, a greater power is permitted to act, as laborers are assisted by ropes in moving weighty bodies; hence they are principally employed in implanting muscles upon bones, and are not discoverable in the heart, stomach, or intestines. Muscles are universally the organs of motions in animals.

The whole fleshy portion of the human body consists of a great number of muscles, or distinct fleshy bundles, whose surfaces, although in contact, are still separate, sliding over each other, in their alternate contractions and elongations; and having both ends fixed into the parts which they are intended to move. They are of different sizes and shapes, according to the degree of force required from them, and the form of the part on which they are situated. Hence those on the body are mostly broad and flat, while those of the extremities are of a long, round figure, with tendinous ends.

Each muscle performs its action by contracting both ends towards the centre, when one of these ends, serving as a fixed point, the other, with the bone to which it is affixed, is necessarily drawn towards it; and thus, by the co-operation of several muscles, the movement of the limb, and even of the whole body, is effected. As soon as the motion is accomplished, the muscles, which performed it, relax, and allow their ends to elongate to their former position.

The structure of a muscle appears to consist of a number of long soft fleshy fibres, lying parallel with each other; and these fibres being enveloped in a thin cellular membrane, are fastened by it into little bundles, which are again tied by some of the same membrane into larger bundles, until the whole muscle is produced; but, though this is the apparent structure of the muscle, its ultimate division is unknown; that which appears to the eye to be an elementary fibre, being discovered, by the help of glasses, to consist of a bundle of fibres.

In this very general description of muscles the form and appearance of those larger ones which cover our bones have been kept

more particularly in view. But it would convey a very imperfect idea of their extent and importance to confine our observations to them. Muscular fibres, in fact, enter into the structure of almost every organ where motion is necessary, and are adapted in their form and size to that of the parts to which they are attached. The heart and blood-vessels; the stomach and intestines; the bladder, &c; are composed, in a great measure, of very minute muscular fibres, stretching longitudinally, transversely, or obliquely, and sometimes in all directions; often so small are they that we can only discover their structure by our glasses, and not unfrequently they escape our detection altogether.

We shall now take a rapid view of the different muscles which move the human body; first, however, observing, that excepting a few, the whole of the muscles on the one side of the frame have corresponding muscles on the other. If an exact section of the whole human body were made, from the top of the head to the lower end of the trunk, the divided sides would be found similar in structure and parts to each other, the contents of the breast and abdomen only excepted, and which from their nature and situation do not admit of equal division.

We also observe, that the end of the muscle, which forms its more fixed point, is called its origin; while the other end, which is fastened to the bone to be moved, is termed its insertion; and likewise, that the shape and turn of the part, particularly of the limbs, depend principally upon the size and proportions of the muscles which are situated thereon. Thus we see many of them taper into long slender tendons, where a decrease of size is necessary and beautiful, as at the small part of the fore arm and leg; while others swell out in symmetrical proportion, and give the appearance of fulness and strength to other parts of the frame.

MUSCLES OF THE HEAD.

The fore-head is wrinkled and drawn upwards, as are also the eye-brows, by a broad thin muscle, which rises at the back-part of the skull, and covering the head runs down the forehead, to be inserted into the skin of the eye-brows.

The eye-brows are drawn towards each other, and the skin of the fore-head pulled down and made to wrinkle, as in frowning, by a pair of small muscles, which rise from the root of the nose, and are inserted into the inside of the eye-brows.

The ear is moved by eleven small muscles. The first three are called common, because they move the whole ear. The next five are termed proper, and only move the parts to which they are connected:

while the other three are internal, to move the small bones situated within the ear.

The eye-lids are closed by a muscle, which, rising from the inner angle of the orbit or cavity in which the eye is embedded, covers the under eye-lid, then surrounds the outer angle, and passing over the upper eye-lid, descends to be inserted, by a short, round tendon, near to its origin.

The eye is opened by a muscle, which (rising from the inner and upper part of the socket) is inserted into the upper eye-lid, to draw it upwards.

The eye-balls are carried through all their motions by six small slender muscles to each. They arise from the bottom of the socket, and are inserted into the outer coat of each eye-ball at different points. Four of these move the eye upwards or downwards, to the right and to the left; while the two remaining muscles give oblique directions to the eye, at the same time protruding it; and all, acting in quick succession, enable the ball of the eye to describe a complete circle.

The nose is affected by several small muscles of the face, but only one muscle on each side is proper to it. This muscle straightens the nostrils, and wrinkles the skin of the nose.

The mouth and lips are moved by nine pair of muscles, which arising from the contiguous bones of the face, are inserted into the lips and angles of the mouth; and from the termination of these muscles a tenth is formed, which surrounds the mouth like a sphincter,* and closes it, by drawing the lips together. It is from the actions of these muscles on the mouth, particularly at its corners, that the emotions of the mind are expressed, and the predominance of particular feelings in individuals is indelibly stamped; save in those whom nature has gifted with an unimpressible dulness of character, or in whom the more delicate lines are filled up by too great fatness. Perhaps it may be worth while to notice the cause of that distortion of features which is produced by palsy. The muscles on one side then cease to act, while those of the other, contracting with their usual force, the mouth is drawn on one side.

The lower-jaw has four pair of muscles for pulling it upwards, as in chewing, viz. two pair which are seen upon the outside of the face, and two pair that are concealed by the angles of the jaw. The first pair arise from the sides of the skull, above the temples, whence they are called temporal muscles; and then descending under the bony bridges of the cheek-bone, are inserted into the lower-jaw near its ends. The second pair arise, at each side, from the under edge of the bony bridge, and descending along the cheek, are inserted into

* A muscle which contracts or shuts an orifice round which it is placed.—ED.

the angle of the lower-jaw. These four muscles act powerfully in pulling the jaw upwards, and when we bite, may be felt swelling out in the flat part of the temple, and upon the back-part of the cheek. The other two pairs of muscles arise from the base of the skull, and are inserted into the lower-jaw internally for enabling this bone to move from side to side, the more effectually to grind the food. The lower-jaw is pulled downwards by muscles, which extend between it and the bone of the tongue, and which also serve to raise the throat upwards.

MUSCLES OF THE NECK.

The neck is covered with numerous and complicated muscles. Those on the fore-part or throat extend some between the head and upper part of the trunk; others between the lower-jaw and the tongue-bone; more between this bone and the cartilages of the throat; while numerous other small muscles are situated between these cartilages and the trunk; and also about the root of the tongue and the back-part of the mouth.

Their uses are, viz. to bend the head forwards; to open the mouth by pulling the lower-jaw downwards; and to move the parts concerned in deglutition and speaking.

The muscles on the back-part of the neck are rather portions of the great muscles, which cover the back, than distinct bundles of fibres; but, having some of their extremities fixed to the back-part of the skull, and also to the hinder portion of the spine of the neck, are intended to move those parts, drawing them backwards and sideways.

MUSCLES OF THE TRUNK.

These are principally the muscles which cover the breast; those which constitute the fore-part and sides of the abdomen; and the great muscles that are spread over the back.

The muscles of the back are numerous and large. They arise from the whole length of the spine or back-bone, having their originating fibres firmly fixed to the numerous processes or handles of that bone; from the upper and posterior edge of the pelvis; and also some portions from the back part of the skull; and from these different organs, they spread over and cover the back of the trunk, and run to be inserted, some into the base of the arm, others into the spine at a distance from their origin, and the remainder into the ribs and back-part of the skull. They consequently not only cover and protect the whole back-part of the body, but also serve to pull the head backwards, move the whole arm, assist respiration by acting on the ribs,

and to give us an erect posture by extending the spine. These are the muscles which suffer in the barbarous practice of whipping; and instances have occurred, where from the too great weight of the whip, or the excessive number of lashes inflicted, the structure of these muscles has been so cruelly torn and destroyed, as to put it out of the power of nature to restore it; mortification has followed, and the unfortunate sufferer expired a victim to inhumanity or ignorance.

The cavity of the abdomen is completed at its fore-part and sides by a few broad and thin muscles, which extend from one bone to the other, having their ends firmly fixed to the edges of these bones; and passing over each other, constitute walls for covering in and containing the bowels. These muscles also assist respiration by helping to expel the air from the lungs; and they contribute to the movement of the body, by bending it forward as in bowing, and by raising the pelvis.

The breast is covered by a few broad and strong muscles, which arise from the whole length of the breast-bone, and form the fore-part of the ribs, and running from each other over the chest, are inserted into the shoulder for moving the limb forward.

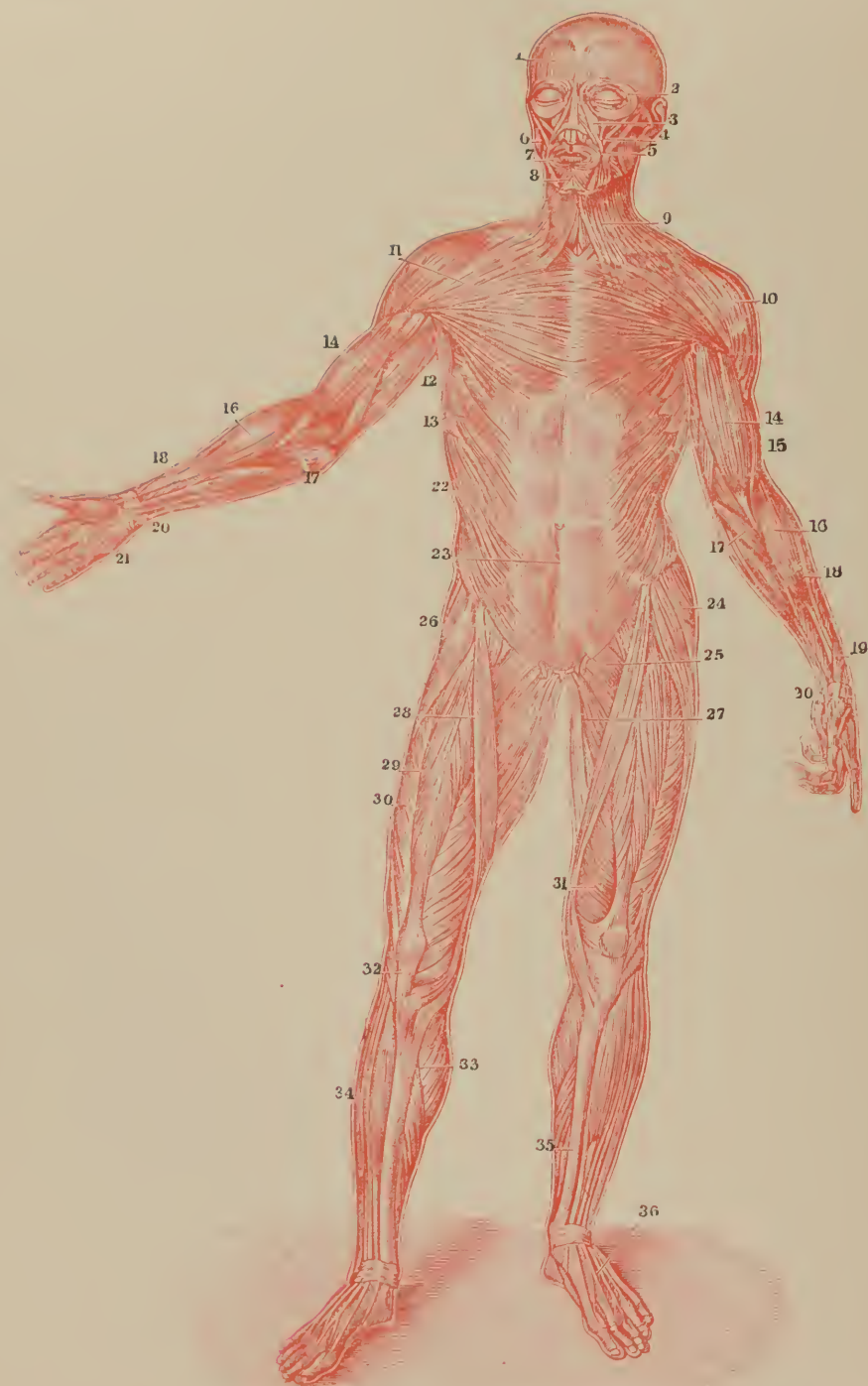
The ribs are raised, and the cavity of the chest enlarged, during inspiration, by eleven double rows of small muscles on each side. They grow out from the lower edge of one rib, and are inserted into the upper rim of the next.

MUSCLES WITHIN THE BODY.

The principal one is called the diaphragm; it is a broad thin muscle, occupying partly a horizontal position, when the body is erect; but inclining downwards towards the back, and dividing the trunk of the body into the two great cavities, the thorax and the abdomen. It arises from the lower end of the breast-bone; from the cartilages of the seventh, and of all the inferior ribs on both sides; and from the second, third and fourth vertebræ, belonging to the loins, called *lumbar vertebræ*; and from these origins its fibres run, like radii, from the circumference to the centre of a circle, to be inserted into a broad flat tendon, which is situated in the middle of this muscle. The diaphragm is the principal agent in respiration, as shall be more fully described under that head.

The other muscles within the body arise from the sides of the lower end of the back-bone, and from the inner surface of the pelvis, and passing down to be inserted into the thigh-bone, a little below its head, they help to turn the toes outwards, and to bend the thigh; or when the limb is fixed, they assist in bending the body.

Plate XIX.



From Professor Dalton's excellent treatise on Physiology and Hygiene* I quote the following remarks on the muscles:

"If the muscles be examined by the microscope they are seen to be composed of a great number of very small *fibres*, too minute to be seen by the naked eye, placed side by side, and all running in nearly the same direction. These fibres are ruddy in color, and very elegantly marked by transverse lines or stripes, which run around them in a circular direction. The fibres themselves are united into small bundles, of from 100 to 200 each, which are placed side by side with other similar bundles, but separated from them by a thin layer of loose intervening tissue, called *Cellular Tissue*. A number of these bundles are also united into larger bundles with cellular tissue between them, and these again into still larger. Thus the entire muscle is made up of many bundles of parallel fibres, which can be separated from each other by careful dissection, and reduced to finer and finer divisions, until they become too small for the naked eye. It is this which gives to the muscular flesh its fibrous appearance on close examination.

"Now the muscles, as we have described them, are endowed with the power of *Contraction*. By this it is meant that the muscular fibres, when they are excited by the influence of the will, can shorten themselves so as to draw together any two points to which their ends are attached. Both ends of a muscle are never attached to one and the same bone, but between their two attachments there is always an articulation or joint, which allows of motion between one bone and the other.

"In contracting, therefore, the muscle draws the two bones to which it is attached nearer to each other.

"Whenever a muscle contracts, it swells from side to side at the same time that its fibres are shortened; and very accurate experiments have shown that it increases in thickness in exactly the same proportion that it diminishes in length. It does not become, therefore, either larger or smaller during contraction, and only changes its shape, but not its size."

"If we grasp with the fingers the muscles on the front part of the arm above the elbow, we can perceive their contraction whenever we bend the elbow forcibly upward. At this time two changes in the muscle are distinctly felt. First, it swells, as we have already said, and becomes prominent under the skin; and, secondly, it becomes at the same moment harder and more resisting to the touch."

* I cannot too highly commend this work of Professor Dalton. It should be in every school and family.

The muscles act like levers. The action of the muscles of the arm in raising the fore-arm has been likened to a lever of the *third* kind. The muscle works at a great disadvantage, because it is inserted *so near to the fulcrum*. But this seeming disadvantage is really an advantage, for it allows of greater freedom of motion. A careful study of the mechanism of the arm shows us that it is a most wonderful contrivance, and is admirably fitted for the purposes for which it is used by man.

MUSCLES OF THE SUPERIOR EXTREMITIES.

These, anatomists divide into the muscles that are situated on the shoulder-blade, on the arm, on the fore-arm, and on the hand.

The muscles situated on the shoulder-blade are called muscles of the arm, because, though they arise from the former bone, which serves to them as a base, yet they are inserted into the bone of the arm, to effect its movements. The same observation holds with respect to the other divisions of these muscles.

The arm, then, is moved by seven muscles, which arise from the shoulder-blade, and passing over the joint are inserted into the arm-bone at its upper and middle parts. These, together with the muscles coming from the back and breast, which are already described, complete the motions of this part of the limb.

The fore-arm is moved in flexion and extension by four muscles, which arise from the upper part of the arm-bone; run down its whole length, and constitute its fulness and figure; they then pass over the elbow joint to be inserted into the upper ends of the two bones of the fore-arm.

The hand is moved at the wrist by six muscles; three of these arise from the upper part of the fore-arm, and descending along its whole length, are continued over the wrist, and inserted into the hand close to this joint; they bend the hand, and are consequently called its flexors. The three extensors, so called because they extend the hand and bring it backwards, arise from the lower end of the arm-bone, and passing down the fore-arm also, run to be inserted into the back of the hand just beyond the wrist. All these muscles, before they reach to the wrist, become slender tendons, which is the cause of the tapering of the fore-arm from about its middle to the hand.

Besides flexion and extension, the hand has a circular kind of

motion, called pronation and supination. The former takes place when we turn the palm down, as upon a table; the latter when we turn the palm upwards; and both motions are produced by four short muscles which extend obliquely across from one bone of the fore-arm to the other, and roll the radius upon the ulna, carrying the wrist round in circles.

The fingers are principally moved by two flexors and one extensor. The former muscles arise from the upper part of the fore-arm near the bend, and running down towards the wrist, send off four round tendons each; which, passing over the palm of the hand, are inserted the one set of tendons into the upper part of the second bone, and the other into the last bone of each of the four fingers. The latter set of tendons pass through slits in the former, which help to bind them down, when the fingers are bent. The extensor muscle arises above the elbow, passes down the fore-arm, and also divides into four round tendons, which can be plainly felt on the back of the hand, and are inserted into all the bones of the four fingers for extending them.

The other movements of the fingers, and those of the thumb, are performed by muscles chiefly situated upon the hand; and which, together with those we have described, complete the motions of these parts.

MUSCLES OF THE INFERIOR EXTREMITIES.

The great muscles which move the thigh all arise from the pelvis, or the lower part of the trunk; covering, and also giving plumpness and shape to the external surface of these parts, they descend over the hip-joint, to be inserted into the thigh-bone below its articulating head. By the action of these powerful muscles the thigh is carried through all its motions.

The leg is moved by eleven muscles, which arise partly from the pelvis and partly from the upper end of the thigh-bone. They descend along this bone, giving fulness and shape to the thigh, and passing over the knee-joint, are inserted into the bones of the leg; the extensors into the upper edge of the knee-pan, for extending the leg; and the flexors into the posterior sides of the long bones of the leg, a little below their heads. The tendons of these muscles form the inner and outer hamstrings. They bend the leg.

The foot is moved by three extensors, and by four flexors. The extensors arise, the two first by double heads from the lower end of

the thigh-bone, near the bend of the knee. These heads soon after unite into the great fleshy bellies, which, swelling out, form the calf of the leg; but decreasing where the leg begins to grow small, they each give off a broad thin tendon, which also uniting, form the tendon of Achilles, to be inserted into the extremity of the heel. These powerful muscles extend the foot by bringing it backwards, and are principally engaged in running, walking, leaping, &c. The third extensor of the foot arises also from the lower end of the thigh bone, and descending by a long, slender tendon, is inserted into the heel, to assist the former; but this muscle is sometimes not to be found in the human subject.

The four flexors arise, the two first from the upper part of the tibia, or principal bone of the leg, and continuing fleshy about half-way down that limb, send off two round tendons, which pass under the inner ankle, and are inserted into the bones of the foot. The other two flexors of the foot arise from the superior part of the fibula or smaller bone of the leg, and sending off two round tendons, which pass under the outer ankle also, are inserted into the bones of the foot. These assist the former in bending the foot by drawing it upwards.

The toes have two extensors and three flexors. The first extensor arises from the upper part of the leg, and descending to the ankle, separates into four round tendons, which run forward upon the upper part of the foot, where they can be plainly felt; and are inserted into the four small toes to extend them. The other extensor arises from the heel, and running forward upon the foot, also divides into four tendons, to be inserted into the toes likewise, and to assist in extending them.

The flexors of the toes arise, the first from the under and back part of the heel, and passing forward along the sole of the foot, sends off four tendons to be inserted into the second row of bones of the four smaller toes. The second flexor arises from the back part of the tibia below its head, and descending the leg, passes at the inner ankle to run along the sole of the foot, on the middle of which it divides into four slender tendons, which perforate the former in the manner of those which bend the fingers; and extending beyond them are inserted into the extremities of the last joint of the four small toes. The third flexor assists the two former in bending the toes, and also draws them inwards. Besides these there are other small muscles which are situated upon the foot, and which with those coming from the leg to be inserted into the great toe, complete the movements of these parts.

Thus we see that the muscles or flesh cover and spread over the

whole frame of bones; connecting and securing its different divisions and parts; and not only producing all its movements, but also giving to it fulness, shape, and beauty. We shall now speak of the motions of those muscles.

OF MUSCULAR MOTION.

Muscular motions are of three kinds; namely, voluntary, involuntary, and mixed. The voluntary motions of muscles are such as proceed from an immediate exercise of the will; thus the mind directs the arm to be raised or depressed, the knee to be bent, the tongue to move, &c. The involuntary motions of muscles are those which are performed by organs, seemingly of their own accord (but really by their proper stimuli), without any attention of the mind or consciousness of its active power; as the contraction and dilatation of the heart, arteries, veins, absorbents, stomach, &c. The mixed motions are those which are in fact under the control of the will, but which ordinarily act without the control of consciousness; as in the muscles of respiration, the intercostals, the abdominal muscles, and the diaphragm.

Motion, as we before observed, is produced by the muscle contracting both its ends towards the centre, when one end being fixed, the other is drawn towards the centre of motion, and with it the bone or any other part to which it is affixed; and thus by the co-operation of several muscles, not only a limb, but even the whole body is put into action. This is the case with all the muscles of voluntary motion; their fibres contract on the application of the nervous influence, and the whole muscle shortens itself; and on the same principle the other muscles perform involuntary motion. The heart, for instance, contracts from the stimulating properties of the blood; the arteries do the same, as do the absorbent vessels, by a similar action of their contents, and all those organs and parts which have the power of acting independent of the mind.

We may define all motion in animals then to be the contraction of the muscular fibre from the presence of some stimulating influence. But whence the muscular fibre derives this contractile power, and what is its nature, remains still a phenomenon that baffles inquiry.

The following explanations of Professor Dalton are exceedingly lucid and interesting:

ATTACHMENT AND MECHANISM OF THE MUSCLES.

“The muscles of the limbs are usually rather elongated in shape, and somewhat thinner at their two extremities than in the middle. At their upper extremities, as a general rule, they are quite closely

attached to the bones ; but at their lower extremities they become more slender and tapering, and run into somewhat long and narrow rounded cords of white fibrous tissue, which are called " sinews " or tendons. These tendons have no power of contraction like that of the muscular fibres, nor can they be stretched like the elastic ligaments of the spinal column ; they are simply very strong and unyielding fibrous cords, by which the muscles are attached to the bones upon which they are to act. When a muscle contracts, accordingly, it draws upon the bone below, by means of the tendon which is inserted into it, exactly as a horse draws a loaded wagon by means of the leathern tugs and couplings of his harness.

"The tendons are usually inserted into the movable part of a limb, at a short distance below the joint. Accordingly, when the muscles contract, they act upon the limb with great rapidity ; and a small amount of contraction in the muscle will move the farther extremity of the limb over a considerable distance. Thus the hand and arm are raised, in bending the elbow-joint, by the action of the flexor muscles situated on the front of the upper arm, above the elbow, called the biceps flexor and the brachialis anticus (Fig. 5). They arise from the bones of the shoulder and upper arm, whence their fibres pass in a downward direction, their tendons being finally inserted into the bones of the forearm just below the elbow-joint. When these muscles contract they draw the forearm upward, moving it upon the elbow-joint like a door upon its hinges, and thus raising any weight which is supported by the hand or wrist. The greater the weight which is to be lifted in this way, the greater the force which is exerted by the muscles ; and they may be felt, accordingly, on the front of the upper arm, swelling and hardening at the moment of contraction exactly in proportion to the amount of strength put forth. The tendon of the biceps may also be felt at the same time, just in front of the elbow-joint, made tense and rigid like a bowstring by the action of the muscle above.

"Nearly all the movements of the body and limbs are performed by a mechanism like that just described. Whatever variations occur are mainly due to the different construction of the joints ; for, while some of them, as the elbow-joint and the knee-joint, are so arranged that they can move only backward and forward like hinges, others, such as the shoulder and hip-joints, can be turned in various directions, or even carried round and round in a circle, or rotated by a kind of twisting motion, like the hand and forearm. But in all cases this is accomplished by the action of muscles, whose tendons are inserted into the bones in various directions, and which thus produce by their contraction the corresponding movements."

MOVEMENTS OF WALKING, RUNNING, AND LEAPING.

"The movements of walking, running, leaping, etc., are performed as follows: When the body stands upright, the feet are planted flat upon the ground, bearing at once upon the heels behind and the ball of the toes in front, the weight of the body resting between the two, upon the middle of the arch of the foot. The body is maintained in this position, as we have seen, by the various muscles, which act in such a way as to keep its different parts carefully balanced, and to retain the weight of the whole suspended exactly over the ankle-joint.

"Now in walking, when a movement is to be executed in advance, the body is first made to lean a little forward, so that its weight no longer remains above the ankle, but is thrown forward so as to rest entirely upon the toes. The heel is then lifted from the ground by the action of the very strong muscles situated on the back part of the leg, called the *gastrocnemius* and *soleus* muscles. These muscles, which come down from above, form the fleshy mass which is known as the "calf of the leg." They terminate in a strong cord-like tendon, called the "Tendon of Achilles," which is easily felt at the back part of the ankle-joint, and which is attached to the projecting bone of the heel, termed the *calcaneum*. When these muscles contract, they draw the heel upward by means of the tendon inserted into it, and lift in this way the ankle-joint and the whole body, carrying it upward and forward, its principal weight resting, as already mentioned, over the ball of the toes.

"The action of the leg and foot, in this movement, is the same as that by which we might lift a weight from the ground with the aid of a lever. Suppose one end of a strong stick to rest upon the ground, and that this stick bears upon its middle a heavy weight. Then, by taking in the hand the other end of the stick, we may lift the weight exactly as the body is lifted, in walking, by the muscles of the leg and the ankle-bones.

"At the moment that the body is raised and tilted forward in this way, the other foot is lifted entirely from the ground and swung forward, so as to take a step in advance. As soon as the body has been carried far enough in an onward direction, the second foot is also raised in the same manner as before, while the first is swung forward in its turn to take another step. In this way the two legs act alternately, the weight of the body being carried forward first by one and then by the other; all the muscles, however, upon the

two sides combining harmoniously in their action, so as to produce an easy, graceful, and continuous movement.

"In the act of walking, as above described, one foot is always upon the ground, and the weight of the body is mainly supported in this way by bearing upon the toes; it is only lifted forward alternately on the two sides by the leverage of the bones of the foot. Consequently no violent muscular exertion is required, and the movement can be kept up for a long time without fatigue.

"The act of running, however, instead of being a series of steps, is performed by a succession of leaps or springs, in each of which the whole body is thrown clear of the ground, and carried forward by the impetus which it has received. In order to accomplish this, at the moment the heel is about to be raised by the action of the muscles above described, the knee and hip-joints are first bent, and then instantly straightened by the sudden contraction of their extensor muscles. The whole limb thus acts like a powerful spring, which, by its sudden extension, throws the entire body off the ground and carries it through the air in an onward direction. The opposite limb is at the same time thrown forward to receive the weight of the body, and to perform, in its turn, and with similar rapidity, the same movements. The speed of the runner depends on the vigor of the muscular contractions, and the swiftness with which the successive motions are performed.

"The act of jumping is accomplished in a similar way with that of running, except that the same motions are executed by both limbs together, so that each leap is performed by itself, and is not combined with the others in a continuous movement."

EFFECTS OF NERVOUS INFLUENCE.

The nervous influence is a stimulus to the voluntary muscles, as blood is to the heart and arteries; food to the stomach; or bile to the intestines. It loses its influence over the system sooner than the irritable principle in the fibre fails; for the irritable state of the muscle continues long after the voluntary motion, or power of excitement from the nerves, is gone. If, while in perfect health, we are killed by a sudden blow, the irritable power of the muscles survives the nervous system many hours. It is this retention of the contractile power which fixes the dead body in whatever posture it is placed, and preserves freshness in the animal which seemed dead, but which is really dying still; for the moment this lingering portion of life is gone, the body dissolves and falls down; and so we judge of freshness by the rigidity of the flesh, and foresee approaching putrefaction by its becoming soft. There is no speedy putrefac-

Plate 3.



SURFACE OF THE CEREBRUM.



UNDER SURFACE OF THE BRAIN, AND
ORIGIN OF THE CRANIAL NERVES.



THE BRAIN EXPOSED.

a a, Scalp turned down : b b b, Cut edge of
Bone : c, Membrane raised : e, the right
and d the left Hemisphere of the Brain.



TRANSVERSE SECTION OF THE NECK.

12, Windpipe ; 13, Œsophegus ; 14, Jugular
Vein and Carotid Artery ; 28, Vertebra.

tion in creatures suddenly killed; in these the body continues fresh and susceptible to stimuli long after death. But if their contractile principle, this irritable nature of the muscular fibre, be exhausted before death, or in the moment of death, then does the body fall quickly into the condition of dead matter, passing through those changes which are the only sure indications of death. The fish which is allowed to struggle till it is dead, and which is not instantly killed, as in crimping; the ox overdriven before it is brought to the slaughter-house; the animal killed by lightning, which suddenly destroys all powers of life; in these the contractile power is effectually exhausted; no mark of irritability remains; and putrefaction comes quickly on. So is it also in those who die of the plague, of poison, of some fevers, or of any sudden and violent disease, which at once extinguishes life, in the common sense, and robs the system of that remnant of life which the physiologist could produce to view. In all these cases the body becomes putrid in a few hours. That a body becomes putrid so early in warm climates is not merely because putrefaction is favored by heat, but because heat extracts the vital power; and often a part of the body has lost its organized power, and is almost putrid, before the whole be dead. We find that we often err in this, that when a body has lost all feeling and motion, we pronounce it dead; the nerves indeed, have ceased to act and perform their office; all feeling and consciousness is gone; but the mere animal power survives the nerves, and through it the whole system may be recalled into perfect life; as after suffocation or drowning, we can by operating upon these poor remains of life, restore the circulation, reanimate the nervous system, and recover that life which seemed to have left the body.

The powers of the nervous system ought, however, to be justly estimated. The perfect animal feels and moves by means of the nerves, which at the same time convey the dictates of the will to the voluntary muscles, and unite every part into a perfect whole. But the muscles themselves are governed by laws of their own. The heart of the chick begins to move before we dare presume that there is any organ for distributing this nervous power. The *punctum saliens* is the heart of the chick; it is seen beating while the body of the chick is but a rude, unformed, and gelatinous mass; daily the active centre increases in strength and power; and it has a delicate feeling of stimuli, so that it quickly reacts, when they are applied to it. Its motions are excited by increased heat and languish when cold, till at last it dies. Then it ceases to act, but still heat restores it to life; and again, when we cut out the heart of a grown animal, so as to separate it from the nervous influ-

ence, it will for some time act on the application of stimuli, then appearing to have its power exhausted, it will lie dead for a while. till recovering that power, it will again act.

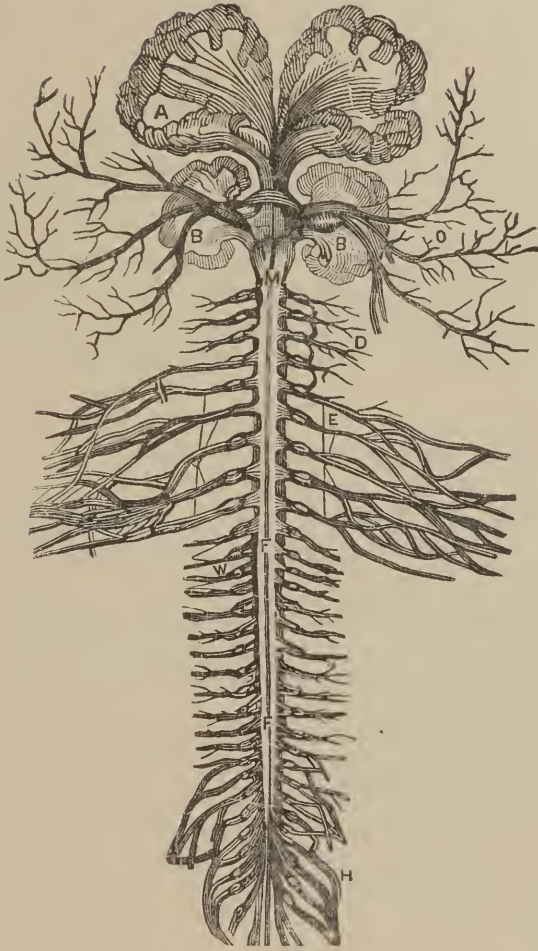
Sensibility, therefore, depends upon the nerves; but *motion*, upon the muscles. Both are equally admirable and inscrutable; the one conduces to all the enjoyments, and all the sufferings of life, and to the intellectual faculties of man; the other is the chief support of animal life, and the source of all the bodily powers. And here we cannot refrain from contemplating this living power. The genius of man has invented pulleys and levers to accelerate motion; and has enabled him even to anticipate all the mechanical helps which he has found in the mechanism of the human body. But, compared to the lowest creature, animated with the living principle, the proudest works of his hands are but as dead matter. In the most perfect machines no new power is acquired; if there is any acquisition of force, there is a proportionate loss of time; while in muscular contraction, which is the immediate source of power in animals, there is a real increase of power without any loss of time.

THE BRAIN AND NERVES.

1. THE BRAIN.

We now come to those organs which endow the human body with feeling; cause all the voluntary motions; and afford a fit residence for the soul. We shall first describe them anatomically, and afterwards speak of their nature and properties.

The brain is a soft pulpy mass of a whitish color on the inside, but grayish exteriorly. It occupies all that cavity which is formed by the bones of the skull; and is surrounded by two membranes; the first or outermost of which is called the *dura mater*, which lines the inside of the skull, and prevents its eminences from giving injury to the delicate structure of the brain. This membrane also serves another useful purpose; it helps to prevent concussions of this organ; for, sending off large folds which enter between the divisions of the brain, it separates the whole mass into portions, which by its partitions it supports and protects from pressure, in the different motions and positions of the head. Three of those partitions are considerable. The first commences at the inside of the forehead, and running along the roof of the skull, descends to about the centre of the



EXPLANATION OF FIGURE II.

This Plate shows the Nervous System; consisting of the Brain, Spinal Cord, and Nerves. The brain gives origin to nine pairs of nerves; and the spinal cord, connected with the brain, gives off thirty-one pairs. There are, properly, two brains; the large brain, occupying the upper and front part of the skull, and the small brain which occupies the posterior and base of the skull.

A. A. The two halves of the Large Brain.

B. B. The two halves of the Small Brain.

F. F. Spinal Cord, joined to the Large Brain.

O. Branches of the Fifth Nerve going to the face, teeth, and eye.

E. Five nerves forming the Brachial Plexus, and going to supply the arms and hands.

W. Branches of the Dorsal, or Nerves of the Back. Those near the lower F. are the Nerves of the Loins.

H. Sacra. Nerves, going to the thighs, legs, and feet.

back-part of the head. It divides the upper part of the brain into two great portions, called hemispheres. The second partition runs horizontally, or nearly at right angles with the first, whose termination it receives at its middle; and, extending itself towards each ear, it divides the brain into the upper and under parts, thus forming a floor for sustaining the former. The third fold runs down from the middle of the second, opposite to where the first ends, and separates the posterior part of the brain also into two divisions. This membrane is strong and of a tendinous nature. Like all other membranes of the body, which are only intended to perform subservient offices for the living parts, it is insensible; being like them composed of cellular membrane; and it may be cut, rasped, or torn, without giving pain. It adheres closely to the inside of the skull, by a great number of filaments, and small vessels, which enter the bones everywhere, and communicate with the membrane covering the skull.

The second membrane of the brain, called *pia mater*, is a soft, thin, transparent substance, and full of vessels. It is connected to the former only by the veins which pass between them, and lies in immediate contact with the surface of the brain, not only covering this delicate organ on the outside, but also insinuating itself into all its windings and fissures for the conveyance of vessels, and nourishment; to supply the wastings of this active intellectual machine. Between these two membranes there is spread a third, which is extremely delicate, resembling a cob-web; but it does not dip into the convolutions of the brain.

Because the folds of the outer membrane of the brain dip deeply into its substance, anatomists pursue this division in their description. Hence, although all the parts of the brain unite at the centre of its base, they describe it as consisting of three great portions.

The first, called the cerebrum, is the largest of the three divisions. It occupies all the space above the horizontal floor of the *dura mater*, and is separated into two great parts, called, as we before observed, hemispheres. Each hemisphere is again divided into three parts called lobes, and has several winding furrows on its surface. The substance of the cerebrum is grayish on the outside, but is white and firmer in texture within.

The cerebellum, or second division of the brain, lies under the former floor at the under and back part of the skull, and is also divided into two portions by the third or descending fold of the *dura mater*. It consists, like the first division, of a grayish and white substance; and has each portion or half, again divided into three bodies, but lacks the furrows on its surface.

The third division is called the medulla oblongata. It lies at the base of the skull, and is a continuation or union of the white substances of the other two divisions; being like these of a white color, and its consistence more firm than that of the grayish portion of the brain.

2. SPINAL CORD.

The spinal marrow, as it is called, is a continuation of this third division of the brain; it passes out of the head by the great opening of the skull, and running down the canal of the back-bone, where it is safely lodged, throws off nerves, till it reaches the pelvis, where (as was before said, when describing those parts) it separates into numerous thread-like nerves, resembling a horse's tail. The spinal marrow, like the brain, consists of a whitish and a grayish substance, and is covered and protected by a continuation of the membranes belonging to that organ.

3. NERVES.

The nerves arise from the brain and spinal marrow. They come out in pairs, and are distributed over the whole body. Forty pairs are counted in all. Of those, nine pairs arise from the base of the brain within the skull; a tenth from the brain, as it passes through the great hole of the skull into the spine; and the remaining thirty from the spinal marrow. Those arising from the brain pass through holes in the base of the skull, and are distributed chiefly to the organs situated in the head, and to those contained in the chest and belly; while the nerves which arise from the spinal marrow go, partly among the internal organs of the trunk, to be distributed principally to the exterior parts of the body, and to the extremities or limbs. All the nerves arise, first by medullary (or marrow-like) fibres, which afterwards meet, and form soft, white, pulpy cords. These cords run out in pairs from their origin; but soon afterwards separate, and spread themselves over the whole body, by dividing into innumerable branches.

1. SENSIBILITY.

The brain and nerves constitute the organs of sensation in the animal machine, and are

THE SOURCE OF SENSIBILITY TO OTHER PARTS.

All the other parts of the body derive their capability of sensation from the brain, the spinal marrow, and the nerves, being in

themselves wholly insensible and incapable of feeling save as they have the nervous branches distributed to them.

That this is the case, is proved by the fact that if a nerve going to any part be tied, that part becomes immediately paralytic and insensible below the ligature, but will recover its powers on liberating the nerve.

The same thing is also proved by the fact that the degrees of sensibility of the different parts of the body are in proportion to the quantity of nervous branches which can be discovered to belong to such parts. Thus, while in some places we find a conflux of nerves forming the most delicate and perfect sense, and endowing that part with full life, there are other parts of the body, as the bones, cartilages, ligaments, and tendons, which, while they are almost destitute of nerves, are so insensible as to be cut, torn, or even totally destroyed without exciting pain.

2. SOURCE OF VOLUNTARY MOTION.

The excitement to all voluntary motion flows from the brain or spinal marrow, through the medium of the nerves, to those parts of the body which we wish to move.

That the immediate cause of all voluntary motion is the brain and spinal marrow, is seen by the fact that when the brain is seriously injured power of motion in the body is often lost.

If, for instance, the brain be compressed, either from a rush of blood, or water, or from other mechanical causes, the whole body will become paralyzed, and the power of motion suspended; but, on removing the compressing cause, this paralysis will cease, and the whole frame will recover its power of sense and motion.

Compression of the spinal marrow will also cause loss of motion and sense, but only in those parts which receive their nerves from it, as the external flesh of the trunk of the body, and muscles of the limbs.

And if a nerve which conveys the immediate cause of motion from the brain, or spinal marrow, to the parts to be moved, be either cut or tied, or otherwise compressed, the part to which this nerve is distributed will immediately become insensible, and lose its power of motion. Thus injuries of particular nerves produce palsy of the parts to which those nerves are sent; as loss of voice, hearing, and speech; but on removing the cause, the disabled parts will recover their functions.

3. SEAT OF SENSATIONS.

The nerves are the *organs* and the brain the *receptacle* of all our sensations.

That sensation arises from an impression made on a nerve and conveyed by it to the brain, is proved by the following facts.

If a nerve be in any way irritated, a sharp sense of pain is immediately produced. The mind in the brain becomes instantly informed of the suffering, and efforts are made to relieve the part. But if that nerve be compressed above the seat of its irritation, so as to cut off the channel of communication between it and the brain; the mind is then no longer conscious of any irritation that is made below the point of compression; and the affected parts are reduced to a state of insensibility similar to that of parts which are destitute of nerves, and may be cut or destroyed without exciting pain. But, by removing the compression from the nerve, the parts below will recover their sensibility; the irritation will be felt anew; and the sensation of pain again propagated along the nerve to the brain, to inform the mind of the presence of an injury.

The reader should be here informed that each nerve issuing from the spinal marrow is divided into two distinct parts, or branches; each of which has its own special office. The anterior branch imparts motion; the posterior branch, sensation. Thus the cutting, or compressing by ligature, of the one, will paralyze the power of motion at that point in the system which it is designed to serve. The other, treated in the same manner, will fail of its office of sensation.

While the power of sensation is destroyed by the one operation, that of motion remains. So, while the power of motion is destroyed by the operation, that of sensation remains.

Now, pain is only the result of an impression made to excess; that is, a set of disagreeable sensations, produced by the too forcible contact of bodies with the organs of sense. It is wisely implanted in the human system to guard it against injury; for without it, the delicate structure of our frames would be almost continually liable to destruction from various bodies in nature around us. But as pain is the salutary consequence of excessive, so sensations without pain are the results of a due impression on our sensitive organs, from the objects which are calculated to influence us; and as long as the body remains in health in all its parts, these impressions will continue to cause sensations in the nerves; which, on their part, will forward them to the brain, where ideas of the nature and properties of the impressing objects will be instantly formed for the instruction of the mind. Thus the skin and other parts possessed of what is generally called feeling, will be susceptible of touch, and communicate to the mind in the brain, the sensations of the hardness or softness, the roughness or smoothness, &c., of such bodies

as may be brought in contact with it; while the organs of the other senses, as the eye, ear, nose, and palate, being differently and more highly organized than the skin (though deriving their sentient powers from the same source as the latter, namely, the nerves), are enabled, by their regular structure, to receive different kinds of impressions, each according¹ to its properties and conformation. The eye will be impressed from light, the ear from sound, the nose from smell, and the palate from taste; and by those various impressions an extensive and varied knowledge will be transmitted to the mind, in the brain, of the nature of the objects in correspondence without.

That the brain not only collects, but also preserves the sensations to an indefinite length of time, is seen in the astonishing strength of the memory of some individuals.

That the brain is the seat of ideas any one may convince himself, by shutting his eyes for a moment, to exclude the influence of present objects, when he may figure in his mind the exact likeness of some dead or absent friend, of a favorite horse or dog, or of any other familiar object.

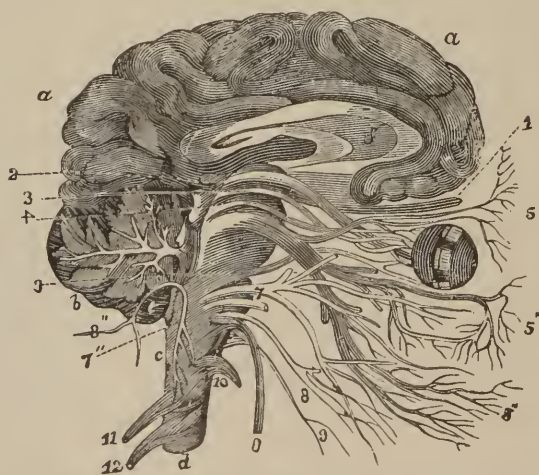
RELATION OF MIND TO MATTER.—THE BRAIN THE ORGAN OF THE MIND.

Although the relation of matter to spirit is one that has engaged the attention of philosophers from the earliest ages, it was not until quite recently that we were able to prove even approximately that the brain was the material organ through which the soul acts. In the time of Plato and Aristotle, dissection of human bodies was a crime; and even within the last twenty-five years, it has been looked upon with disfavor by legislators and by the people. But in spite of prejudices and opposition, physiologists have persevered in their labors, and after centuries of study over the bodies of men and of the lower animals, supplemented by the close and partial researches of modern theorists and microscopists, we are now able to state with positiveness that the brain is the organ of the mind, just as decidedly as that the digestive apparatus is the organ of digestion. Although investigations on this subject have not ceased, are indeed yet in the height of their activity, it is yet sufficiently demonstrated that the mental, moral, and emotional nature of any being depend on the *quantity* and *quality* of his brain.

By quantity of the brain, I mean its weight in pounds and ounces; by quality, I mean the character of its structure—whether fine or coarse, simple or complex, and so forth. Brains that are of



DISTRIBUTION OF THE NERVES OF THE HEAD. Page 100.



RELATION OF THE NERVES TO THE BRAIN. Page 97.

a, a, Cerebrum ; b, Cerebellum ; c, Spiral Nerves ; d, Spiral Cord.

1, Nerves of Smell ; 2, 4, Nerves of Sight ; 3, 4, Nerves of Taste ; 5, 5, Nerves of Teeth ;
7, Nerves of Hearing ; 8, 9, 10, Nerves of Tongue, Larynx and Neck.

the same size and weight may differ very widely in the number of their folds or convolutions, the relative proportion of white and gray matter, the number and shape of their cells or fibres, and in their intimate chemical structure. All these factors taken together make up what I term the *quality* of the brain.

The conclusion that the immaterial part of our nature acts through the substance of the brain, and in the character of its manifestations depends on the quantity and quality of the cerebral substance, is mainly derived from the following arguments :

1. *From the comparative anatomy of man and animals.*—From those types of animals in which the cerebral hemispheres begin to appear, through all the grades—fish, birds, dogs, horses, apes, gorillas—up to the creation of man, we find that the intelligence bears a decided relation to the quantity and quality of the brain. (See the chapter on *Man Compared with other Animals*.)

The relative size of the brain, as compared with the body, is also an important factor in estimating the intelligence. The *whale* and the *elephant* are the only animals that have larger brains than man. But the brains of these animals are far inferior in *quality* to those of man, are moreover of less *relative* weight, and therefore have far less capacity for manifesting intelligence. The brains of gorillas and of the man-like apes—the most intelligent orders of animals below man—are inferior to the human standard not only in quality, but also in quantity. The most intelligent apes or gorillas have less weight of brain than the average of human idiots.

2. *From the comparative anatomy of the different races.*—The contents of the cranial cavity are determined in two ways—by weight and by measurement in cubic inches. The lamented Dr. Morton, who devoted a laborious lifetime to this investigation, found the cranial capacity of the Germans, English, and Anglo-Americans to be 92 cubic inches ; of the Celtic, 87 cubic inches ; of the Malays, 85 cubic inches ; of the Chinese, 82 cubic inches ; of the American negro, 83 ; of the American Indian, 84 ; of the Toltec Indian, 77 ; of the Hottentots and Australians (the lowest) 75 cubic inches. It will be observed that these measurements correspond to the relative intelligence of these races as recognized by history.

Dr. J. B. Davis, Tiedman, Dr. Ira Russell, and other observers, both in this country and in Europe, have arrived at substantially the same conclusions as Dr. Morton, though by comparing the weight rather than the cubic measurements of the brain. From the researches of Dr. Russell it would seem that when negroes and whites amalgamate, the weight of the brain tends to diminish below the standard of the black race.

3. *From the comparative anatomy of the sexes.*—Women have on the average *five ounces less brain* than men. This difference in quantity is to a certain extent made up by the superior quality of the feminine brain. Women are usually more finely organized than men. High organization is generally accompanied by a correspondingly fine quality of brain. A moderately sized brain of a fine quality is oftentimes far superior, particularly in special aptitudes, to a larger brain of coarse quality. Therefore woman, though more or less subject to man, is oftentimes his equal, and in some particulars incomparably his superior.

4. *From the comparative anatomy of individuals in the various grades of intellectuality.*—The brains of really great men are always superior to those of average humanity, in quality or quantity, or in both. The brain of Daniel Webster measured 122 cubic inches, and the gray matter, on which thought more particularly depends, was of remarkable thickness. The brain of Cuvier was also remarkably large. It is probable that in coming time chemistry and the microscope will be able to detect even the very minute shades of difference between the various orders of intellect simply by microscopical and chemical examination of the brain after death.

5. *From the fact that morbid changes in the brain always accompany mental disease, such as idiocy and insanity.*—It is only quite recently that physicians have been able to say with certainty that every case of absolute insanity is caused by some disease of the brain. From the researches of Prof. Schroeder Van der Kolk, who has devoted over a quarter of a century to this subject, and also of other observers, it is clear that there can be no mental disease, without some corresponding morbid change in the brain. Careful and repeated observations have also shown that the percentage of phosphorus is less in idiots than in the healthy, less in infancy and the decline of old age than in adult life. It has also been ascertained that other constituents of the brain are more or less modified by disease either in quantity or quality. It is logically probable, though not directly established, that the slightest forms of mental disease, the mildest stages of idiocy, hypochondriasis, melancholy, dementia, or imbecility are but the symptoms and results of *correspondingly slight morbid changes in the brain*.

On the other hand it is well established that there can be no important injury of the brain without a corresponding impairment of the intellect. Excess or deficiency of blood in the cranium, pressure of pieces of bone, or other foreign substances on the brain, the concussion of a blow or fall, will cause either temporary or permanent injury to the mind, such as is not observed when other parts of the body are similarly affected.

There are degrees and stages in the diseases of the brain, just as there are degrees and stages of the diseases of any other organ, and the conclusion is logical and inevitable, that the slightest forms of mental or nervous derangement are but the symptoms and expressions of corresponding slight disturbances of the central nervous system. The present prospects are that the microscope and chemistry will establish this question beyond a doubt. On the other hand it is established, by logical probability, that disease of any other organ, however severe or long-continued, never produces mental derangement without first inducing disease of the brain.

6. *From our knowledge of the minute anatomy of the brain as revealed by the microscope and chemistry.*—According to Lockart Clarke—a high authority on this subject—the convolutions of the human brain consist of *eight* distinct concentric layers. These are formed of very fine fibres, and of cells in an *infinite* variety, lying very closely together. Under a very close examination it is seen that there are an *infinite* number of communications between an *infinite* multitude of cells, of an *infinite* variety of forms. These cells vary in diameter between the $\frac{1}{2000}$ to $\frac{1}{3000}$ of an inch, and in shape may be pyramidal, pyriform, triangular, round, oval, or fusiform.

Macaulay finely compares the mind of Bacon to the tent which the fairy Peibanon gave to Prince Ahmed, “Fold it, and it seemed the toy for the hand of a lady; spread it, and the armies of powerful sultans might repose beneath its shade.”

In view of what is now known of the wonderfully complex anatomy of the human brain, we see that this happy comparison may with full justice be applied to every intelligent being.

Chemistry has shown that the proportions of the solid constituents of the brain, and especially of phosphorus, vary with the intelligence in different individuals, and in the same individual at different epochs of life, being least in infancy and the decline of old age, and greatest at maturity.

7. *From the fact that after intellectual labor an increase of alkaline phosphates is detected in the urine.*—We have already stated that phosphorus is an important constituent of the healthy brain. We believe that all of our physiological psychologists would substantially endorse the bold declaration of a recent German writer, “*ohne Phosphor kein Gedanke*”—no thought without phosphorus.

The phosphates that are found in the urine after intellectual labor are the products of the metamorphosis of the tissues of the

brain. Dr. H. Byasson, in a recent pamphlet on this subject, states, that "Provided a man should be subjected for three days to a uniform diet, and placed under nearly similar external circumstances, it would be possible to determine, by analysis of urine alone, which day had been passed in repose, and which had been spent in physical or mental exertion." We hold that every intellectual act, from the meanest to the most exalted, is attended by a corresponding metamorphosis of nerve-tissue. It has been found by chemical analysis of the *extractives* of nerves that their functional activity is accompanied by definite change or waste of tissue, closely resembling that which is observed in muscles after they have been thrown into activity.

The logical conclusion is inevitable, that for all the phases of intellectual activity—the cool calculation of the man of sense and the wild frenzy of the poet—the hate of the ruffian and the affection of the maiden—for the lightest whisper of fancy, and the weightiest toil of reason—for the oath that falls from the reprobate and for the prayer that breathes from the heart of the devotee—for all thought, all will, all emotion, there is a corresponding change and waste of tissue in the brain, of which the mind is the function.

8. *From the facts already established in regard to the Correlation and Conservation of Forces* (see chapter on "Life").—The known and familiar forces—light, heat, electricity, magnetism, and motion—are correlated to each other, and, so far as experiments are able to show, no force is ever annihilated. From these known facts, that to a certain extent are visible to sense-perception, we may rise toward the unknown, and by logical probability we may arrive at the grand conception that the soul of every man is correlated to all the other known forces of the body—heat, electricity, magnetism, nervous force, and motion—and that the Creator himself is correlated to his entire creation.

This theory harmonizes with our intuitive ideas in regard to the immortality of the soul and the existence of a God. If none of the forces are ever annihilated, but are correlated to and persist in each other, the soul, if it be correlated to the other forces of the body, can never be annihilated, but must be immortal. For the same reason God himself must be eternal.

This however is only a theory. It is by no means a necessary inference from what we know of the relation of body and mind. It is a speculation in which we have a right to indulge; but it is not knowledge—we do not know whether mind is a result of changes in the brain or an attendant on them. According to Prof.

Helmholtz, it appears that the rate of travel of the nervous force can be measured with perfect accuracy. He has ascertained, by means of the chronoscope, that the rapidity of the nervous force varies in different individuals, but that its average speed is 97.1 feet a second; in the active and nervous it moves more rapidly than in the cold and phlegmatic. Those experiments may lead to important discoveries.

This doctrine, and *the facts* of the correlation and conservation of forces, are of vast import and of profound significance.

9. *From the observed facts of our common, every-day experience.*—Every studious school-boy knows that after working hard and long over any knotty problem, the head becomes more tired than any other portion of the body. When we wish to recall an idea or to start a train of thought, how often do we involuntarily scratch the head or rap the brows. The common expression, “the eyes are the mirrors of the soul,” is as true scientifically as it is metaphorically. The optic nerve which expands on the retina comes directly from the central nervous system, and is in fact a process of the brain itself. Therefore the eye becomes necessarily a revealer of the inmost workings of the brain—of the secret thoughts and emotions that we would not presume to speak of with our lips—and even of those feelings and sentiments that we most earnestly strive to conceal. All persons who are subject to headache know that it interferes with the intellectual processes far more than most severe pain in any other part of the body, and in some cases renders mental exertion impossible.

That alcohol, opium, hashish, and other poisons which affect the brain, also craze or stupefy the intellect; that all fevers which, as the expression is, “go to the brain,” render the patient delirious or positively unconscious; that starvation of the body enfeebles or destroys the intellect—all these corroborative proofs of the dependence of mind on matter are so familiar that they hardly need to be mentioned.

The essential conditions for a *good memory* are these three:

1. *Natural endowment of brain.*—There are as many different kinds of memory as there are different kinds of talent among men, and all are as much dependent on the brain for their existence as digestion is dependent on the apparatus of digestion, or respiration on the lungs.

The intellect is the function of the brain. Memory is one of the faculties of the intellect. Therefore memory is one of the functions of the brain, and in its quantity and quality must correspond to the quantity and quality of the cerebral substance.

2. *Careful and special training.*

3. *A healthy brain.*—The soul acting on the brain produces memory, and all the other faculties of the intellect, just as when acting upon the digestive organs it produces digestion.

If the organs of digestion are sound, the digestion will be good, though all the rest of the body is saturated with disease. Just so, if the brain be sound, the memory will be good (so far as its natural or acquired capacities will admit), even though every other organ of the body is in a morbid condition.

It is true that disease of any part of the body may impair the digestion, but only by sympathetic or reflex action, and probably not until it has communicated a morbid condition to the organs of digestion. Just so, disease of any part of the body may impair the memory, but not until by sympathetic or reflex action it has given rise to some morbid condition of the brain.

There is no question that the word “functional,” which at best is a mere cover for our ignorance, must in time be gradually discarded as that ignorance grows less.

The lungs may be hollowed by wasting tubercles, the liver may be eaten by cancer, the function of digestion may be attended with perpetual distress, and the conscience may be harrowed by remorse, or seared as with a hot iron, and yet the memory and all the other faculties of the intellect remain clear and unimpaired.

On the other hand, the slightest effusion of blood in the brain, and even a congestion or molecular disturbance of the hemispheres, may destroy the entire memory, or some special phase of it, for a lifetime.

Coleridge says that a “sound logic, healthy digestion, and a quiet conscience, are the proper conditions of memory.”

This remark of Coleridge was recorded in the times of men’s ignorance, and is not worthy of our day, nor of modern science. As a scientific explanation it is of about as much value as the semi-witticism that Emerson quotes so approvingly: The man who has a diseased liver is a Presbyterian, while he in whom this organ is healthy is a Unitarian. These generalizations are the relics of dark eras, when even physicians did not know whether the intellect was located in the head or in the abdomen, and when diseases of the organs of digestion were supposed to be the direct causes of diseases of the mental, moral, and emotional nature.

It is only indirectly, and probably by first inducing disease of the brain, that indigestion can affect the memory, or any of the intellectual faculties.

PHRENOLOGY.

In the light of these facts, we find it a not very difficult task to distinguish the true from the false in what is commonly known as *Phrenology*. *Cranioscopy, or the examination of the head*, informs us with considerable accuracy of two particulars only.

In the first place, it informs us of the *quantity* of the brain. Although in some exceptional cases the skull is developed out of proportion to the cerebral substance—although in some few cases of disease the size of the head gives no indication of the size of the brain, and although the frontal sinuses interfere very seriously with the examination of a certain limited portion of the forehead, yet it is unquestionably true that, as a rule, the exterior surface of the skull corresponds to the *quantity* of the cranial contents.

In the second place, *Cranioscopy* informs us in regard to the *relative* development of the different regions of the brain. Although the divisions and subdivisions of the head that have been mapped out by phrenologists, and about which charlatans talk and lecture, are far from being scientifically demonstrated, yet it is now quite generally conceded among those who have given special attention to this subject that the anterior lobes of the brain are the organs of the pure intellect and reason, the posterior lobes of the passions and propelling powers, and the upper portion of the moral faculties. *It is furthermore conceded that it is entirely probable and consistent with analogy, and with what we know of the brain, that its various faculties may all be separately localized to even a greater extent than has been claimed by phrenologists.*

On the other hand, examination of the exterior of the head gives us no information whatever in regard to *two* vitally important factors, a knowledge of which is indispensable when we attempt to estimate character by the study of the brain.

First: it does not inform us in regard to the *quality* of the brain. The intellect depends on the number and depth of the convolutions, the thickness of the gray matter, the number and shape of the cells and the method of their arrangement, and also on the nature of the cerebral substance—in a word, on all those elements that make up what I call the *quality* of the brain. *It is obvious that examination of the head can give us no information in regard to these elements of quality, upon which the intellect depends as much as on the quantity, and in special aptitudes even more.*

Secondly: *examination of the head does not tell us how much a brain has been educated and trained.* A small brain that has been long and elaborately disciplined, that has been stored with know-

ledge and fortified by experience, that has acquired tone and vigor and elasticity by systematic activity, through a responsible and industrious lifetime, may be, and often is, far superior in every intellectual attribute to even a very large brain that has been suffered to vegetate in ignorance and inactivity, that has never been trained to bear responsibility, to originate thought or to experience emotion. It is true that education and the discipline of activity do cause the brain to grow in size, and therefore to make the skull larger, but only within certain limits. The brain, in this respect, follows the analogy of the muscles, but probably to a less degree.

If the human arm were covered with unyielding bone, like the brain, we could judge no more of its muscles by exterior examination than we now can of the brain. We could ascertain the *size* of the arm, and the relative size of its main divisions. But of the *quality* of the arm—whether muscle or fatty matter, coarse or fine, flabby or wiry—of the extent of training, gymnastic or pugilistic, to which it had been subjected, exterior examination could teach us little more than it can of the brain.

It is manifest, therefore, that *Cranioscopy* must be a very uncertain method of ascertaining character. It is in the very nature of things impossible that it should ever become an *exact* science. It is impossible to ascertain the quality of the brain, or the amount of culture it has received, from external manipulation of the skull.

Recent Experiments on the Brain during the last few years have demonstrated that on the surface of the brain the cortex, so called, there are definite circumscribed centres or “active spots,” which, on being excited by mild electric currents, cause muscular movements. When other portions of the cortex are excited by the current no muscular movements appear.

These experiments were first made by Hitzig, of Berlin. These were confirmed by Ferrier in England, and in this country by various observers and by myself.

Physiologists do not yet agree as to their import. So far as they go, they are in harmony with the views of phrenology now held among scientific men. The general doctrine of the *localization* of faculties in the brain is gaining ground every year.

TEMPERAMENT AND MENTAL DEVELOPMENT.

Temperament signifies bodily constitution, made up of bones and muscles, nutritive system, and brain and nerves. Plate 6, Fig. 1, the Vital Temperament, shows fulness of flesh, and the power

Plate 6.

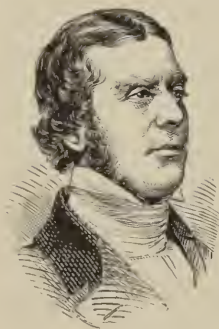


Fig. 1, Vital.



Fig. 2, Motive.



Fig. 3, Mental.



Fig. 8, Higher Order of Mental Powers.



Fig. 4, Male Skull.



Fig. 9, Lower Type of Vital Temperament.



Fig. 5, Female Skull.



Fig. 6, Great Development of Intellect.



Fig. 10, Moderate Development of Animal Propensities.



Fig. 12, High Moral Development.



Fig. 7, Idiot.



Fig. 11, (Prize Fighter) Animal Propensities fully Developed.



Fig. 13, Low Order of Intellect and Morality.

TEMPERAMENT AND MENTAL DEVELOPMENT.

to reenperate the exhausted vitality, and thereby furnish nourishment for the support of the system. Fig. 2, the Motive Temperament, indicates a strong predominance of the bones and muscles, with a tendency to be executive, and forcible, and industrious. It gives strength, endurance, and hardihood. Fig. 3, the Mental Temperament, shows a large brain, great activity and excitability, a tendency to think and to study, and to live in the atmosphere of mental life. The first is good-natured, genial, healthy, and happy; the second is thorough, powerful, wilful, and capable of carrying responsibilities and being master of the situation; Fig. 3 is the natural student, artist, poet and orator. That portion of the head above a line drawn from the eye to the opening of the ear, is filled with brain, folded and compacted (Plate 3), and according to size and quality of brain is the mental power of the person.

Fig. 4 represents a male skull; Fig. 5, a female skull; their constitutional difference in shape, that of the male being more square in front, larger above and about the ears in the region of force and severity, and higher in the crown head. The female is longer in the development backward from the opening of the ear, showing strong maternal and social dispositions. Fig. 6, Galileo, the philosopher, shows a great development of the forehead, or intellectual region, great capacity from the opening of the ear forward. Fig. 7, an Idiot, shows not only a very small head but almost an entire deficiency of brain in the forehead; of course these are extremes, but such extremes exist in nature. Fig. 8 shows a predominance of the Mental Temperament, and a high order of training and cultivation. It may be said to indicate the result of intellectual, esthetical, and Christian culture. Fig. 9 shows the Vital Temperament in strong predominance, with nothing but physical culture, and the lower type of that. There is a lack of development in the forehead, and the whole head is low. Such a nose and mouth are evidences of the want of cultivation. Fig. 10 shows a moderate development of the organs of animal propensities, which are located in the side of the head above and about the ears. When these are small, the head is flattened and narrow at the sides. The predominance of this development is in the forehead and top-head. He was a clergyman eminent for intellectual and moral power, but deficient in the organs of selfishness. Fig. 11, Yankee Sullivan, the notorious prize fighter, shows width of head as compared with the height. How wide just above and about the ears in the region of destructiveness, combativeness, secretiveness, and acquisitiveness! Fig. 12, Bishop White, distinguished for a high development of the moral

sentiments in the top-head, also for great intellectual power, evinced by breadth and capacity of the anterior part of the head. He also had the Mental Temperament in a very high degree, and shows what culture of the highest kind can give. Fig. 13, it will be seen, is largely developed in the base of the brain about the ears, but there is very little development in the front and upper portion of the head. In this the animal propensities very strongly predominate over the intellectual and moral powers. It is as weak in intellect and morality and moral feelings as can be found this side of Idiocy. Since the brain is the organ of the mind, and size of brain is the measure of mental power, the quality being equal, the size and shape of the head reveals the talents and dispositions of mankind.

REFLEX ACTION OF THE NERVOUS CENTRES.

When an excitation is received by the nerves, at any part of the body, the stimulus may be conveyed to the central nervous system, and thence transmitted to some other portion of the body. By means of this reflex power of the nervous centres, injury or disease of one part may give rise to disease of another. Many of our paralyses are caused by reflex action.

DIFFERENT PARTS POSSESS DIFFERENT DEGREES OF SENSIBILITY.

Thus we see that the brain, spinal marrow, and nerves alone constitute the sensitive or feeling part of the human system; and that all its other parts, being composed of matter totally insensible in itself, are possessed of the capability of feeling only in proportion as they receive the branches of nerves. Hence, there is a gradation of feeling throughout the whole body, each of its organs and parts being endowed with that precise degree of sense which will be sufficient for the performance of its function in the living machine. The cellular membrane, for instance, whose office it is to unite into one whole all the moving parts of the system, is without feeling, being insensible to stimuli. This also is the case with the coverings of the brain, the coats of the nerves, the sheaths of muscles, of tendons, ligaments, and all the apparatus of joints, together with the substance of the tendons and ligaments themselves; for these parts, performing only subservient offices to the living organs, would derange the whole system by being possessed of a sensibility which would leave them no longer capable of bearing the friction, straining, shocks, and blows which they now endure without injury in the

different movements of the frame. The feeling of bones is decided. They certainly do not send the sensation to the brain; but in their diseases, as in wounds of joints, &c., the great pain which the patient suffers, evidently shows them to be then not insensible. The muscles are all endowed with the sense of feeling, by a distribution of the nervous fibre everywhere throughout their substance. This is necessary to their office. As agents of voluntary motion, they must be capable of receiving and obeying the commands of the will; and they are so. Hence, the mind no sooner wills an act than the command flies along the nerve to the part to be moved, and the action is instantly performed. This dispatch is illustrated in the rapid movements of an opera dancer, every one of which were resolved upon in the mind before they could have been executed by the feet; and at least as strikingly in the organs of speech, by which *two thousand* letters can be pronounced in a minute, each requiring a distinct and successive contraction of many muscles. The skin possesses a finer degree of sense than the flesh, being fuller of nervous branches; and, rising in the scale of sensibility, may be said to form the lowest of the organs of the senses. Feeling is the property and use of the skin of the human body, which enjoys it over its whole surface, but more exquisitely in some parts than in others. Thus, while the greater part of the skin possesses it in a degree sufficient only to guard the body from danger, by warning it of the contact of substances which might be injurious, there are other parts, as the palm of the hand and sole of the foot, which are endowed with a greater sensibility, so much as, on a slight friction, to create a tickling kind of pleasure, and in some persons involuntary laughter. But this sense exists in a higher degree at the *points of the fingers*, which, from their convexity, are particularly adapted to be the organs of touch. The tongue, the organ of taste, possesses this sensibility in a higher degree still; for though it judges of the substances which constitute our food, by the same process as that used by the fingers—namely, contact—yet the latter with their finest feeling would be inadequate to discover bodies by their flavor. A step higher may be ranked the organ of smelling. The nose is so acute in its sense, as to be impressed by the light and volatile effluvia rising from bodies and floating in the air, and can consequently distinguish substances at a considerable distance. Higher again stands the sensitive faculty of the ear. This organ is qualified to be acted upon by the mere vibrations of the air, which, striking against this delicate part of our mechanism, produce sounds, and afford us information of things occurring at a great distance. But the most acute sense, and ranking, perhaps, next to the more simple operations of the mind, is that

of sight. The eye, the beautiful organ of this power, is a type of its functions. In transparency, delicacy, and brilliancy it surpasses all other parts of the body, appearing to lose the grosser characteristics of animal matter, and to approach the nature of the mind, to which it serves as the most useful, rapid, and extensive messenger for procuring knowledge of the various objects around us.

Such is the varied distribution of sense which we see the brain and nerve bestowing upon the other parts of the frame. We are familiar with its uses. We know the kinds of bodies which are calculated to impress the different organs, and even the manner in which those bodies effect their impressions. And further, we can define and trace the limits of the senses themselves. For instance, we can determine the extent of vision, hearing, &c. ; but, when we ascend one step higher in our researches, and inquire into the intimate structure of the brain and its operations, the more we are lost in wonder and admiration of this astonishing part of our system.

THE GREAT SYMPATHETIC NERVE.

The name has been given to a chain of nervous knots, or ganglia, which extend along the front and sides of the spine. These ganglia or knots are connected by small fibres ; each one of them is also connected with the nerves that come from the cerebro-spinal system. The nerves of the great sympathetic are distributed to the stomach, the kidneys, the liver, the intestines, the heart, and other organs which are not under the control of the will.

There are four of these ganglia or knots in the head. One of these is called the *ophthalmic ganglion*, and is situated in the orbit of the eye. This nerve probably has something to do with *sick head-ache*, for the pain in that affection is often felt through the eye. One of the other ganglia is called the *otic ganglion*, and is found near the base of the skull. This nerve has something to do with hearing.

In the neck, the great sympathetic has two or three *ganglia*. These are closely connected with each other, and with the spinal cord. It has also ganglia in the chest, that connect with the nerves that go to the heart and lungs, and ganglia in the abdomen that form the *solar plexus*, which is perhaps the most important part of the great sympathetic. In the pelvis the sympathetic has also several ganglia. Two of these supply the genital organs.

All these ganglia are connected with each other, with the cerebro-spinal system, and with the internal organs of the body.

FUNCTIONS OF THE SYMPATHETIC NERVE.

We know much less of this sympathetic system than of the cerebro-spinal axis. There are great difficulties in the way of studying it.

There are three kinds of *reflex* action that are produced by the sympathetic system.

1. *From the internal organs to the surface and to the muscles.*—It is through the sympathetic system that indigestion, constipation, diseases of the liver, worms, and so forth, cause convulsions in children and that the same diseases produce headache in grown people.

The truth probably is, that most of our headaches and back-aches are caused by the reflex action of this sympathetic system.

2. *From the surfaces and extremities to the internal organs.*—We all know by experience that wet feet cause us to take cold, often bring on a headache, or an attack of diarrhœa.

Mental and moral emotions, fear, joy, and so forth, affect the stomach, the liver, and the heart through the sympathetic.

It is the sympathetic system that causes us to blush. It may be said in general, that those who blush easily and deeply have a sympathetic system of peculiar sensitiveness. The sympathetic system is more sensitive in women than in men, in the finely organized than in those of an opposite temperament, in children than in adults. Under great mental excitement the cheek is often flushed, and the ears are red and warm. These symptoms are caused by the sympathetic system.

3. *From one internal organ to another.*—The stomach, the liver, the intestines, the heart, the brain, and the genital organs—all are apt to sympathize with each other in affliction. Diseases of the genital organs in male or female usually affect the stomach, or the brain, or the bowels through the sympathetic. It is for this reason, chiefly, that patients afflicted with even very slight disorders of the genital organs, are apt to suffer at the same time from mental depression and hypochondriasis, which they cannot throw off even with their utmost striving.

The sympathetic system is a kind of slow means of telegraphic communication between all the important organs of the body.

The lungs are not very liberally supplied from the sympathetic

system, while the stomach is very abundantly supplied from the *solar plexus*, which is partly made up from the sympathetic. This accounts for the fact which we are all familiar with, that *consumptives* are usually in good spirits, even when in the last stages of the disease, while *dyspeptics* are frequently much depressed, and oftentimes exceedingly and unreasonably melancholy, even when their symptoms and pains are very slight and transient.

The sympathetic system works slower than the cerebro-spinal system. It frequently takes a long time for disease of any organ to affect another injuriously. A child may have worms for weeks and months before convulsions appear. A person may be dyspeptic for years before the intestines are affected and constipation or diarrhœa ensues. A person exposes himself to cold and dampness, and becomes chilled through and through. The next morning he awakes with a cold in his head, or a diarrhœa. The sympathetic system has brought on his bad symptoms, but several hours were necessary.

The sympathetic system has also important offices in connection with the eye, the ear, and the nose. These organs are provided with two sets of muscles—one deep, the other superficial. These muscles regulate the amount of sensation that these organs receive. The superficial muscles are supplied by the cerebro-spinal system, and the deep-seated by the sympathetic.

It is a very interesting fact connected with the sympathetic system, that if it be divided on one side of the neck there is an increase of temperature of the face on that side, and dilatation of the pupil. The same effect has been observed from injury to the sympathetic ganglion in the neck. The sympathetic nerve is probably much more at fault in many of our nervous diseases than is commonly supposed.

There is yet much room for study of the functions of the sympathetic, and it is to be hoped that in a few years our knowledge of this very important system will be greatly perfected.

THE SENSES AND THEIR ORGANS.

Next in order to the Brain and Nerves, come the Organs of the Senses.

We commence with the description of the eye.

DESCRIPTION OF THE EYE.

The eye is lodged, for its safety, in a socket formed partly by the bones of the skull, and partly by those of the face ; and for the greater security of this delicate organ, it is defended on the outside by the eye-lids, which serve as an occasional covering against external bodies ; while a fine, limpid fluid, secreted from a small gland, situated near the outer angle of the eye-lids, is constantly spread over the surface of the eye, to keep it moist and transparent ; and to wash away those particles, which, floating in the air, might have attached themselves to this surface, and produced injury. This fluid, called the tears, afterwards passes off by two small openings at the opposite or inner angle of the eye ; and thence descends by means of a canal, into the nose. The eye-lashes serve not only to protect the eye from insects and minute bodies ; but also to moderate the action of the rays of light in their passage to the eye.

Each eye-ball is partly transparent and partly opaque. The former portion transmits the rays of light to the nerve spread at the back part of the eye ; while the latter serves as a covering to this organ, and is intended also to confine the waters of the eye, and limit the passage of light. The opaque part consists ; first, of the white outside coat which covers all the back part of the globe of the eye ; and, running forward, joins its anterior edge to that of the transparent coat, called cornea, which is placed at the fore part of the eye. These two coats form the outside covering or case for containing the other parts of the eye, and from their difference of structure and use, are not inaptly compared to the outside case of a watch ; the transparent coat answering to the glass, and the opaque one to the case into which it is fixed. It is the external part of this opaque coat which forms the white of the eye. Immediately upon the inner surface of this coat is spread the second coat, the choroid, which is also opaque ; but being of a more delicate structure than the former it serves as a soft easy bed for the optic nerve to expand upon. This coat also runs forward towards the circular edge of the transparent part of the eye, and here its edges appear to be thrown off, to form a kind of curtain with an opening in the middle, the pupil, for the passage of the rays of light. This curtain is called the iris, and together with the choroid

which we have described, it then expands into a very delicate membrane, lining the ball of the eye, for receiving the rays of light, which the transparent parts of the eye transmit to it. We will now describe those parts.

The lucid or transparent portion of the eye constitutes the principal share of this organ, and is composed of extremely fine membranes, and humors of a greater or less density. The first and principal membrane is that which we have compared to the glass of a watch, serving at the fore part of the eye as a covering to the parts within, and adapted also to transmit the rays of light. Immediately before the retina or expansion of the optic nerve, and occupying the posterior part of the eye, lies the vitreous humor, so called from its resemblance to fused glass. This humor consists of a fine clear liquid, contained within the very minute cells of a delicate membrane; and is a little hollowed at its fore part for lodging another humor, the crystalline, which is of a firmer texture, and of a lenticular (or double convex) shape. All the remaining space of the eye is filled with what is named the aqueous humor, because it is a thin, clear water, not contained within any cells, but lying immediately in contact with the coats and other parts of the eye. This fluid supports the convexity of the eye before, and will escape on puncturing the transparent cornea, which lies on its outside.

VISION.

Vision is effected by the eye through the medium of light, for the rays, passing directly from the objects which we behold to this organ, penetrate its transparent parts, till they fall upon and impress the retina or expanded nerve at the bottom of the eye. Now, the scope of vision being great, while the retina or seat of impression is but limited in size, it follows that objects can be painted only in miniature on this part, and that for this purpose its apparatus is necessary to converge the rays of light, so that they should convey a diminished figure of the object to the nerve of the eye. This is really and principally the use of the transparent humors of this organ. They refract and converge the rays of light in the manner of a camera obscura, which represents an artificial eye; so that a distinct image of the object we look at is formed at the bottom of the eye; and this point of convergence of the rays is called its focus. As in a camera obscura, so also on the retina, objects are painted in an inverted position. This happens from the necessary crossing of the rays in their passage to the nerve, and may be seen by cutting away the back part of the opaque coat of the eye, and placing a piece of paper to receive the object. Habit alone enables us to

judge of the true situation, and likewise of the distance and magnitude of objects. To a young man who was born blind, and who was couched by Mr. Cheselden, every object (as he expressed himself) seemed to touch his eyes, as what he felt did his skin; and he thought no objects so agreeable to him as those which were smooth and regular, although for some time he could form no judgment of their shape, or guess what it was in any of them that was pleasing.

Eyes that are of a proper length bring the rays of light that come from distant objects (parallel rays) exactly to a focus on the retina, or on the screen which receives the image, without any effort. Rays that come from an object near at hand, a book which is being read, for instance, are divergent. Consequently an effort must be made to bring them to a focus. This effort is made by a little muscle inside the eye, which passes all around the ball, and is attached to the cornea, the iris, and the choroid coat. (The muscle may be seen in the cut.) This muscle acts on the lens of the eye, and causes it to become thicker in looking at near objects. Thus the divergent rays are also brought to a focus on the retina.

This act of adapting the eye to vision at different distances is called the act of accommodation. It is an act that takes place every time we turn the gaze from a near object to one that is more remote, and *vice versâ*. We are conscious of this movement going on within the eye-ball, and we may prove that it takes place by attempting to see two objects situated at different distances from the eye at the same instant of time. We are never able to do it. This action of accommodation is all done within the eye, by the ciliary muscle acting on the lens.

As life advances this muscle becomes weakened, and the lens becomes rigid. The muscle cannot then act as powerfully on the lens, consequently the rays from near objects cannot be exactly focused on the retina. The book must be held farther off, whence the rays are less divergent,—more nearly parallel. Finally, it must be held so far off that the image on the retina becomes too small to be perceived. This state of things is far-sightedness. It is relieved by putting a double convex lens in front of the eye, to compensate for the loss of power in the muscle to make the lens inside the eye as thick as is necessary. Placing a convex lens in front of the eye in effect lengthens the eye-ball.

Some eyes are born too short, and they require double convex glasses, just as those of old people do, as soon as they are used for reading, sewing, or the like. Their condition is essentially the same as that of the eyes of old people, although produced by a different cause. In the man of advanced years the rays cannot be

focused, because the lens cannot be sufficiently altered, that is, made long enough, by the weakened muscle. In the child who needs convex glasses it is the whole eye-ball which is too short.

Other eyes are born too long. They are the so-called short-sighted eyes. They require dispersing or concave lenses in front of the eye, in order that vision for the distance may be distinct. Persons with eyes that are too long can usually read without glasses, because divergent rays, which always proceed from near objects, are focused on long eyes without difficulty. Placing concave lenses before eyes in effect shortens them, hence their use in looking at a distance. Some eye-balls are so unsymmetrical or irregular in shape, that they are too long in one meridian and of the proper length in others. This defect makes the vision indistinct at any distance. Such eyes require glasses which are ground from a cylinder—cylindrical glasses.

When eyes are so formed, or when they become so changed by age that glasses are required in order to distinct vision, they should be worn; a failure to employ them produces harm, and prevents the proper use of the eyes.

HEARING.

FIGURE OF THE EAR, SHOWING THE AUDITORY CANAL, THE DRUM, AND THE LITTLE BONES.

The internal ear, the immediate organ of hearing, is seated within the temporal bone of the skull, and consists of certain cavities, labyrinths, and passages, hollowed out of its substance; together with their fine lining membranes, some very minute bones, and the auditory nerve. The first passage is a canal of considerable length, which leads from the external to the internal ear. It is lined with a fine membrane, and is furnished with several small hairs for guarding the parts within from the entrance of insects. The inner extremity of this canal is closed by a thin transparent membrane, set in a bony circle like a drum-head. Under this membrane runs a branch of a nerve; and immediately beyond it lies a small cavity, called the drum of the ear. This cavity contains a chain formed by 3 small bones, which are furnished with muscles, cartilages, and regular articulations. It is of a hemispherical shape, and has four openings



EXTERNAL, INTERNAL, AND MIDDLE EAR, WITH DRUM AND LITTLE BONES.

from it; the first is a small canal communicating with the back-part of the mouth; the other three are holes which open into different recesses of the ear, and are covered with a very fine membrane. One of these openings directly leads through a bony partition, into what is called the labyrinth of the ear. This part of the organ of hearing consists, first, of an irregular cavity much smaller than the drum of the ear; next, of three semicircular canals, each of about a line, (the twelfth part of an inch) in diameter, which open by both their extremities into this cavity; and lastly, of a spiral canal, not unlike the shell of a snail, making two turns and a half from its base to its apex, and opening also into the former cavity. All these parts of the labyrinth are lined with a very fine membrane, and are filled with a watery fluid, which transmits to the nervous pulp in contact with it, the vibrations it receives from the membrane separating the labyrinth from the drum of the ear.

Owing to the situation, the variety, and the minuteness of the parts composing the ear, we do not know exactly the mode of action of this intricate but admirable organ. It is certain however, that the auditory nerve, which is distributed over the whole of the labyrinth, is the seat of the sense of hearing; and that a certain modulation of the air, collected by the funnel-like shape of the external ear, and conveyed through the first canal which we have described to the membrane, and thence communicating its vibrations to the nerve, is the cause of hearing. That sound is propagated to the ear by means of the air, is proved by ringing a bell under the receiver of an air-pump; the sound it affords being found to diminish gradually as the air becomes exhausted, till at length it ceases. We now describe the manner in which it is supposed that hearing is effected.

The stroke of some body against another, causes an undulating action in the surrounding air, not unlike to the circles which take place on throwing a stone into smooth water; and these waves of the air, beat against the external ear. Here they are collected and conveyed through the canal to the membrane closing the drum of the ear. This membrane they force into vibration, which is propagated onwards by the small bones in the drum of the ear, till it reaches the labyrinth, where communicating its impulse to the watery fluid contained in its cavities, the auditory nerve at length becomes affected by the tremor of the water, and the sense of sound is produced.

SMELLING.

The nose externally is constructed of bones, cartilages, small muscles, and the skin. Its internal part, which is the seat of smell,

ling, has an extensive surface formed by the convolutions of four small bones; two in each nostril. A soft pulpy membrane covers them through all their windings, and upon this the branches of the olfactory or smelling nerve are copiously distributed.

Many cavities and recesses, formed in the bones of the skull, communicate with the nose, perhaps to increase the power of the organ, as well as to give distinctness and volume to the voice.

The sense of smelling is effected by the membrane before described. The subtle and invisible effluvia of bodies, being carried with the air in which they float, through the nose in inspiration, strike against the almost naked and soft olfactory nerves which are every where spread throughout this membrane, and are kept moist by a constant secretion of mucus, and produce in them a feeling, which we call smelling. This sense, besides adding to our pleasurable feelings, seems intended to direct us to a proper choice of aliments, warning us to avoid those which may be putrid or otherwise dangerous; and also admonishing us to avoid exhalations and vapors which render the air unhealthy. When we wish to take in much of the effluvia of anything, we naturally close the mouth, that all the air we inspire may pass through the nostrils, and at the same time, by means of the muscles of the nose, the nostrils are dilated, and a greater quantity of air is drawn into them.

THE TASTE.

Another sense which the all-wise Creator has given to assist us in the proper choice of food, and also for combining pleasure with the reception of nourishment, is that of taste. This property resides in the nervous extremities or papillæ, (minute terminations of the nerves) which lie upon the extremity and sides of the tongue. It is excited by the contact of those bodies, whose properties are fitted to act upon these nerves. Thus by making different kinds of impressions, owing to their various qualities, (some substances being mild, others acrid and pungent,) the different tastes of sour, sweet, austere, &c. are produced; but the particular state of these nervous papillæ, of the tongue, with respect to their moisture, their figure, and their covering, will produce a considerable difference in the exercise of this sense. Hence it varies in different people, and suffers great changes even in the same person, by sickness, and various other causes.

The ability of the tongue to distinguish tastes, has been providently implanted, that we may discern what food is most salutary. In general that which is so, is pleasant, and that which is ill-tasted is rarely fit for our nourishment. In this manner nature has invited us to take necessary food, as well by the pain called hunger, as by

the pleasure arising from the sense of taste. Brute animals, governed by instinct merely, have the faculty of distinguishing flavors more accurately, by means of which they abstain cautiously from poisonous or unhealthy food. Thus herbivorous animals, to which many noxious plants are offered, are furnished with long and large papillæ in the tongue; which are not so necessary to man, whose reason and means of information serve, in part, instead of mere animal instinct.

TOUCH.

The sense of touch is that faculty by which we distinguish certain properties of bodies by the feel; and in a general acceptation, may, perhaps, be said to exist in all the parts of the body possessed of sensibility. But the term is commonly confined to the nervous extremities or papillæ of the skin, which being more numerous, or covered with thicker or thinner cuticle in some places than in others, give, as we before observed, a grosser or finer degree of feeling to the different parts. These papillæ are capable of being impressed by the exterior properties of bodies, whence the mind is enabled to form ideas of their solidity, moisture, inequality, smoothness, dryness, measure, fluidity, and heat. But the part of the skin which most possesses this sense for the examination of substances, is that covering the points of the fingers; which from the peculiar disposition of its nervous papillæ, and also from the convex shape of the part on which they lie, is admirably adapted for inquiring into the nature of bodies by the feel.

We have now rapidly described the senses and their organs. In each of the latter we have seen the nerve to be the seat of impression; and the organ itself to be an apparatus for conveying to the nerve a particular influence from the impressing object. Thus the transparent parts of the eye transmit the rays of light to the nerve which is spread behind them. The ear is adapted to collect, concentrate, and propagate the vibrations of sound, till they strike against the nerves distributed in the labyrinth. The nose, tongue, and fingers, are so constructed that the nerves, spread upon those parts, receive different kinds of impressions from contact, owing partly to the difference of the medium through which the nerves are acted upon; the membrane which covers them, being in some organs of a different structure, and in some of greater density than in others. Thus there is a common seat for impression in all the organs. The difference of sense is created by the organ itself, whose peculiar construction is fitted to receive only a particular influence from the impressing body. What admirable simplicity! and yet how astonishing are the operations of these beautiful parts of our mechanism.

Plate 17.



FIG. 1.—LAUGHING.



FIG. 2.—CRYING.

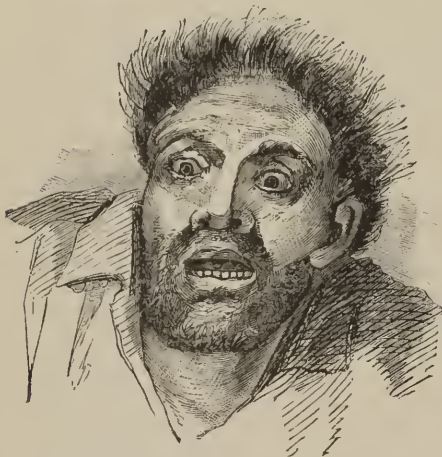


FIG. 3.—FEAR AND TERROR.

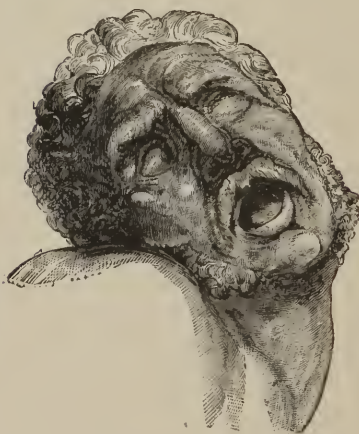


FIG. 4.—AGONY.

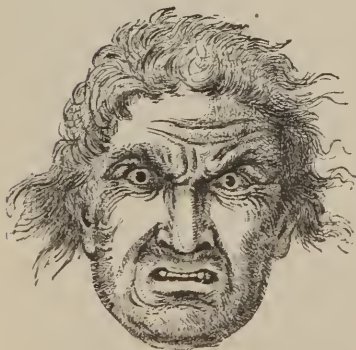


FIG. 5.—ANGER AND RAGE.



FIG. 6—SENILITY—OLD AGE.

EXPRESSIONS OF THE FACE.—Bringing into action the various muscles.

THE FACE.

The features of the face viewed collectively present a striking and beautiful characteristic of the superior nature of man. Perhaps nothing in creation enjoys and expresses so many, various, and elevated influences as does the human countenance. It is the image of the soul, the place where its ideas, motions, &c. are chiefly set to view, and the seat of the principal organs of sense. To the countenance we naturally look in conversation for the full meaning of the words expressed. By it we are enabled to anticipate the emotions and feelings of others, before they yet reach the tongue. It speaks a language peculiar to itself, anticipating and outstripping all others in rapidity; which is general to all nations, and intelligible to every individual of the whole human race. Even brutes, whom man has domesticated and made his occasional companions, are not ignorant of this kind of expression. When the dog would know the commands of his master, unable to understand them in the complicated sounds of speech, he looks intently upon his face, and endeavors to collect thence his wishes and the disposition with which he regards him. Nor does this expression entirely forsake the face of man even in death. All the affections of the mind are more or less portrayed in turn in this limited but expressive field; love, pity, courage, fear, calmness, anger, and every other strong characteristic of the man.

To the size and proportion of the bones underneath, which constitute the base of the face, the difference of features is to be principally attributed. Youth, age, sickness, health, and even the stronger affections of the mind, have an effect in changing the countenance; but that diversity of feature consisting of the difference of length, breadth, or projection, depends chiefly upon the bony frame that lies below it.

From this difference of features, is that great diversity produced, which varies the countenances not only of nations, but of individuals; so that no two, perhaps, of the whole family of mankind, could be found exactly alike. But, notwithstanding this surprising diversity, we are not to suppose that the individual features composing each face are different from those of all other faces. We are rather led to believe, that each is capable of an indefinite number of combinations with other features; and that from a very few kinds of features, the astonishing and beautiful variety of faces we see round us are, by transposition, produced.

This supposition is supported by the simplicity of means which nature selects for effecting her purposes; and in a great degree by the likeness which often exists between two faces, sometimes so exact that one shall be mistaken for the other.

THE COMPLEXION.

It was not till lately that the true seat of the color of the skin became known. Previously anatomists supposed that color depended on the outer or scarf-skin. Malpighi, an eminent Italian physician, at length led to the knowledge of its true seat. He found that the skin of the human body consists of three parts, separable one from the other; namely, the scarf-skin which is external, the thicker or true skin beneath it, and a coagulated substance which lies between both. On future investigation it was discovered that this coagulated substance is exclusively the seat of color in the skin, and is what causes the various shades of complexion in the different inhabitants of the globe. This discovery has been since fully confirmed. If the scarf-skin be separated from the coagulated substance beneath, it will be found to be semi-transparent. This is invariably the case with the scarf-skin of the blackest negro, and with that of the purest white. Whence it follows that the outer skin of both being similar in transparency and color, (and the inner or thicker skin being known not to differ in persons of the most opposite complexions,) the intermediate coagulated substance must be the seat of color; and this substance varying in its tint, and appearing through the transparent scarf-skin, produces the different complexions of the human race.

Whatever causes co-operate in creating these appearances, produce them by acting upon the coagulated substance; which, from the almost incredible manner in which the scarf-skin is perforated, is as accessible as this skin itself. These causes are probably those various qualities of things, which, combined with the influence of the sun, contribute to form what we call climate. For the coagulated substance is found to vary in its color from the equator to the poles.

SPEECH.

We shall now proceed to examine briefly, the organs of speech which give to man a superior and distinctive faculty.

The organs of speech are the mouth, the windpipe, and the lungs. The first of these is known to every one, as also the parts which it contains. The windpipe is a passage commencing at the back part of the mouth, and thence descends along the neck to open into the lungs. At its upper part it is constructed of five thin cartilages, connected together by ligaments, and put into motion by small muscles. These cartilages form a chamber at the head of the tube, which is situated at the root of the tongue, and may be felt to project in the upper and fore-part of the throat. The opening of this chamber into the throat is a very narrow chink, which is dilated and contracted

to produce every change in the modulation of the voice, by the muscles attached to the cartilages. To defend this opening, a beautiful contrivance is adopted of an elastic valve, which falls flat upon it whenever we swallow, like the key of a wind instrument; and which at other times rises up and leaves the aperture uncovered for the uninterrupted ingress and egress of the air.

The tube leading to the lungs is formed by numerous semicircular cartilages, connected by muscular fibres and membranes. They are elastic and firm, to keep the canal of the windpipe always open, and to resist compression. At the same time it is nearly as flexible as though it was wholly membranous, and gives way to all the bendings of the neck. Had it not been so, we should have been in perpetual hazard of strangulation. The passage to the stomach, on the contrary, being intended only for occasional use, has its sides always collapsed, unless when distended by the passing food. The lungs are two cellular bags for containing air; they are situated in the chest, and both open into the bottom of the windpipe.

In *inspiration* the air dilates the lungs. These, like bellows, force it back in *expiration* into the windpipe. Here the air is straightened in its passage, and made to rush with force along the tube towards its upper end, where striking against the elastic cartilages of this part, it is variously modulated, and the sound of the voice produced. But these cartilages do not articulate the sounds: to effect this the voice is required to pass through the mouth, where it is differently modified by the action of the tongue, which is either pushed against the teeth, or upwards towards the palate, detaining it in its passage, or permitting it to flow freely, by contracting or dilating the mouth. It has been humorously and truly remarked of the tongue, that it is the only muscle under the control of the will which is not wearied by incessant use.

LARYNX.

The following description of the larynx I take from my translation of Tobold's Chronic Diseases of the Larynx:—

“The larynx belongs to the musical instruments which are designated as tongue-piped. There are wind instruments with hard and with soft tongues. To the former belongs the well-known mouth-drum, to the latter, the larynx, with its double-lipped membranous tongues extended within its cavity, with its bellows (lungs), its air-tube

(bronchial ramifications, trachea), and its mouth-piece (pharynx, mouth, and cavity of the nose). If the vocal chords are put in vibration by a continuous expiratory stream of air from beneath, while the glottis is contracted, a sound is made, the height and depth of which depends on the length, the elasticity, and the extent of the tension.

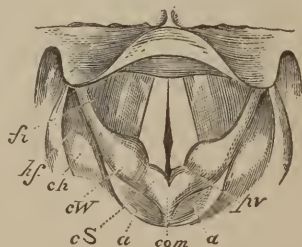
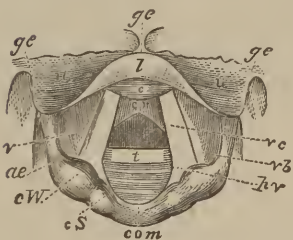
"The formation of the voice depends on four main points.

"1. The air must be moved against the chink of the glottis with a certain expulsive power.

"2. The chink of the glottis must not exceed a certain diameter. If the opening of the glottis extends more than one-twelfth or one-tenth of an inch, no more sound will arise. But the opening is made chiefly by the glottis ligamentosa, while the glottis cartilaginea must remain closed to give rise to a pure sound.

"3. The vocal chords must every time have a defined tension, for if they be very much extended, a shrieking, piping sound is made, whereas, if they be much slackened, only a dull sound is produced, if at the same time the glottis be much shortened.

"4. The excursive capability of the vocal chords must not be interfered with, and their elastic power must be fully intact, as they are extended by the pressing forward column of air, and are thus dilated and elevated. The degree of tension depends on the power of the stream of air and the elasticity of the vocal chords."



THE LARYNX.

Laryngoscopic drawing, showing the vocal cords drawn widely apart, and the position of the various parts above and below the glottis, during quiet inspiration.

u. Upper surface of epiglottis.

l. Lip of epiglottis.

vc. Vocal cord.

Laryngoscopic drawing, showing the approximation of the vocal cords, and the position of the various parts in the act of vocalization.

a. Arytenoid cartilages.

a. Arytenoid cartilages.

pv. Process of the vocal cords.

(See articles on *Larynx* and *Laryngoscope*.)

THE BLOOD.

Having now described those parts of the human body on which its figure, support, strength, motion, sensibility, &c., immediately depend, we next come to those which are intended to replace the waste of the machine, and to supply it with new energies.

Like all other animal matter, the human body suffers a constant change. Life itself is an action inducing change, which ultimately leads to death. This change is continually taking place, a removal of the old, worn-out particles, and an incessant deposition of new ones. To effect the latter purpose, nutritious matter must be lodged in the animal machine, otherwise it will speedily wear down and run into dissolution. We therefore find it supplied with a rich store of a nutritious fluid, fine enough to penetrate its minutest parts, and constantly circulating through the whole machine.

The following description of the blood, from the excellent treatise of Professor Dalton, I present in full in his own language:—

“The *blood* is a thick opaque fluid, of a rich deep red hue, so peculiar that it may usually be distinguished by its color alone. It contains many different ingredients, of which the most important are, first, *water*; second, *mineral substances*; and, third, *albuminous matters*.

“The water of the blood is what gives it its fluidity. For if the water be driven off by evaporation, the other ingredients remain behind in the form of a dry mass, which would be entirely useless for the purpose of nutrition. But in its natural condition the water of the blood unites all its other ingredients into a uniform liquid, which easily moves through the blood-vessels, and dissolves the new substances which are absorbed from without. Taken altogether, the water forms rather more than three-fourths of the whole mass of the blood.

“The mineral ingredients are in much smaller proportion. The most abundant is common *salt*, which we know is taken with the food, and is a necessary ingredient of all the tissues. It forms, however, only about four parts in a thousand of the whole blood. The combinations of *lime*, which the bones and teeth require for their nourishment, are found in still smaller quantity, dissolved in the animal fluids of the blood. Other mineral substances of various kinds are also present in their requisite quantity.

“But the most remarkable of all the ingredients of the blood are its albuminous matters. It is these substances which give to it its thick and animal consistency, and which also act the most important part in the nutrition of the body. They are of two dif

ferent kinds, which are naturally mingled together in the blood in a liquid form.

“The first of these is the *albumen*. We can obtain a tolerably correct idea of the characters of albumen from the fresh white of egg, which has received a similar name. This is not exactly the same thing with the albumen of the blood, but still the two resemble each other very closely. They may both be coagulated by boiling, when they become solid, white, and opaque. The principal difference between them is, that the fresh white of egg is partly gelatinous in consistency, while the albumen of the blood is perfectly fluid, and may readily be made to flow through the veins, or to run from one glass vessel into another.

“The albumen is about forty parts in a thousand, or one twenty-fifth of the whole blood. It represents, in great part, the concentrated nourishment derived from the food, for it is probably into this substance that most of the albuminose is converted, after being absorbed from the intestine in the digestive process. It is the material out of which the tissues of the body are afterward formed.

“The other animal matter in the blood is the *fibrine*. Although this is in very small quantity—viz., only two parts in a thousand—it is an exceedingly curious and important ingredient. For it possesses a property which does not belong to any other animal substance, viz., the property of ‘spontaneous coagulation’—that is, it will coagulate by itself, without being boiled or brought in contact with an acid, or treated by any other chemical substance. We shall see hereafter what an important character this property gives to the blood.

“But these substances are only the liquid portions of the blood. They are all dissolved in each other, and form a perfectly transparent and almost colorless fluid. Beside them there are a multitude of little rounded bodies contained in the liquid mixture, which make the blood opaque, and give to it its red color. They are so abundant that they are crowded together by thousands in each drop of blood, and so minute that they are only visible by the aid of the microscope. They are called the *blood-globules*.

“*Globules of the Blood*.—If we examine a drop of blood under the microscope, we see the blood-globules floating in profusion in the fluid parts. Each one is a delicate circular plate or disk, somewhat like a piece of money in form, only with the edges rounded, and rather thicker than the central part. In human blood they are about $\frac{1}{30000}$ of an inch in diameter, when measured across their flat surfaces, and about $\frac{1}{80000}$ of an inch in thickness.

“The blood-globules are exceedingly soft and flexible in con-

sistency. In fact, they are nearly fluid, like drops of very thick oil or honey, only they do not dissolve in the other parts of the blood, but retain their own form and substance. Consequently, when moving about in the fluid, as they often do under the microscope, following accidental currents in the blood, passing through narrow channels, and turning corners among the other globules, they may be seen to twist about, and bend over, and elongate in various ways, and then resume their natural figure as before. This peculiar semi-fluid and flexible consistency is one of their greatest peculiarities.

“When seen by transmitted light and in thin layers, they are of a very pale amber color, and nearly transparent. Nevertheless they contain all the red color of the blood; and when seen heaped together in layers only five or six deep, they show distinctly the ruddy color which belongs to them. Beside, if they are separated by filtration or any other means, or if they are not formed in their natural quantity, the blood becomes paler, exactly in proportion as its globules are deficient.

“They also communicate to the blood its opacity. Although each globule by itself is transparent, yet, when they are crowded together and mingled with the fluid parts of the blood, the whole becomes opaque, and apparently impenetrable to light. This is because the globules of the blood and its fluid parts are of a different nature and composition. The same thing will happen when oil is emulsified by a watery alkaline solution. The oil is transparent by itself, and the alkaline liquid is transparent by itself; but if you mix the two together, the whole becomes white and opaque like milk. So the globules of the blood and its fluid parts, mingled together, produce a thick red and opaque liquid.

“The red globules are the vivifying elements of the blood. They communicate to it its animating and stimulating properties, by which all the organs are maintained in a condition of vital activity.

“Beside the red globules, the blood contains other little bodies of a different form and aspect. These are the *white globules*. They are very much less numerous than the red, as there are not more than three or four of them for every thousand of the others. They are of a little larger size, measuring about $\frac{1}{2500}$ of an inch in diameter, of a rounded form and a finely granulated texture. They are usually concealed, for the most part, in the greater abundance of the red globules.

“When the ingredients of the blood are examined by analysis, they are found to be mingled together in the following proportions:

"COMPOSITION OF THE BLOOD IN 1000 PARTS.

"Water.....	795
Globules.....	150
Albumen.....	40
Fibrine.....	2
Other animal matters.....	5
Mineral substances.....	8
	<hr/>
	1000

"*Coagulation of the Blood.*—Such are the properties and constitution of the blood while circulating in the interior of the body. But if it be withdrawn from the vessels a very remarkable change takes place, which alters its whole appearance.

"This change is its *coagulation*.

"When a patient is bled from the arm or is accidentally wounded, the blood runs from the opened vein in a perfectly liquid stream; but soon afterward it begins to appear thicker than before, and will not run in drops, nor moisten the fingers so easily when touched. When this alteration has once commenced, it goes on rapidly increasing, the blood growing thicker and thicker, until it finally sets into a uniform, firm, elastic, jelly-like mass. It is then said to be 'coagulated' or 'clotted.' This change is usually complete in about twenty minutes after the blood has been withdrawn from the veins.

"Now this coagulation of the blood is entirely dependent upon its fibrine. This substance alone has the property of coagulating spontaneously. None of the other ingredients can solidify in this way, and if the fibrine be taken out, the blood loses altogether its power of coagulation.

"But how is it that the whole blood becomes clotted in a single mass, if this power belongs only to the fibrine?

"It is because the fibrine, though in very small quantity, as compared with the other substances in the blood, is diffused uniformly throughout the whole; and when it coagulates, therefore, on being withdrawn from the vessels, it entangles all the other ingredients with it, and holds them imprisoned in its own substance. The water of the blood, accordingly, the albumen, the globules, etc., are all mechanically retained by the coagulating fibrine.

"But not long afterward a partial separation takes place between them. The fibrine solidifies still more; and, by contracting upon itself, squeezes out the liquid portions of the blood from between its meshes. Drops of a clear, amber-colored fluid begin to exude from its surface, and these drops, growing larger and larger, run together

into little pools, which still increase in size until the entire surface is covered with the transparent liquid. The remainder grows at the same time smaller and firmer, until at last the whole is permanently separated into two parts, a solid and a liquid. The solid part is called the *clot*; the liquid part is the *serum*.

“If you examine, therefore, a cupful of blood, at the end of twelve hours after it has been drawn from the veins, you will see that it is no longer a uniform mass, but appears as a solid clot floating in the transparent serum.

“The clot, at this time, is still firm, red, and opaque, since it contains all the globules of the blood as well as the fibrine. For these globules cannot escape from the clot, owing to their form and size, and are therefore retained by the meshes of the coagulated fibrine. The serum, on the other hand, is transparent, and nearly colorless. It contains all the albumen, the water, and other substances dissolved in them.

“*Importance of Coagulation.*—Now this coagulation of the blood is a property of the greatest importance; for it is the only thing which prevents our bleeding to death after the slightest incision or injury to the blood-vessels. Whenever these vessels are opened by an accidental cut in the skin or in the muscles, the blood at first flows with great freedom, according to the size of the wound. But if we press firmly upon the injured part with a bandage or with the fingers, and then, after a short time, remove the pressure, we find that the bleeding has stopped altogether. This is because the thin layer of blood between the edges of the wounded vessels has coagulated and blocked up the opening. No matter how thin this layer may be, it still coagulates; for every particle of the blood, however small, contains its due proportion of fibrine, and, consequently, solidifies at the proper time. The clot thus formed adheres to the edges of the wounded parts, and so acts as a continuous bandage or plug, until the tissues have again grown together and become permanently united.

“It is in this way that the bleeding from all ordinary wounds is usually arrested by nature. No matter how freely the blood may flow at first, if you keep the parts steadily compressed for twenty minutes or half an hour, the fibrine will then be coagulated and the bleeding will stop.

“But when the wound is very deep, or when any of the principal arteries have been severed, this means will not succeed; for the blood comes with so much force from those larger vessels that it cannot be kept back by ordinary pressure, and no time is allowed for its permanent coagulation. Then we must call for the assist-

ance of the surgeon, who is often compelled to search for the blood vessels in the deeper parts of the wound, and to tie up their open mouths with a fine cord or ligature. Why this operation is successful requires a further explanation.

“*Coagulation in the Interior of the Body.*—It is a curious fact that the blood will coagulate, not only when it is discharged externally, but also even in the interior of the body, *whenever it is withdrawn from the ordinary course of the circulation.* Thus, if we receive a bruise, and the little vessels beneath the skin are torn, the blood which flows from them coagulates in the neighborhood of the injury. Any internal bleeding produces, after a time, a clot in the corresponding situation where the blood is effused. After death, also, coagulation takes place in the cavities of the heart, and in the great veins near it; and whenever any part of the body is so injured as to stop its circulation, the blood necessarily coagulates in its vessels.

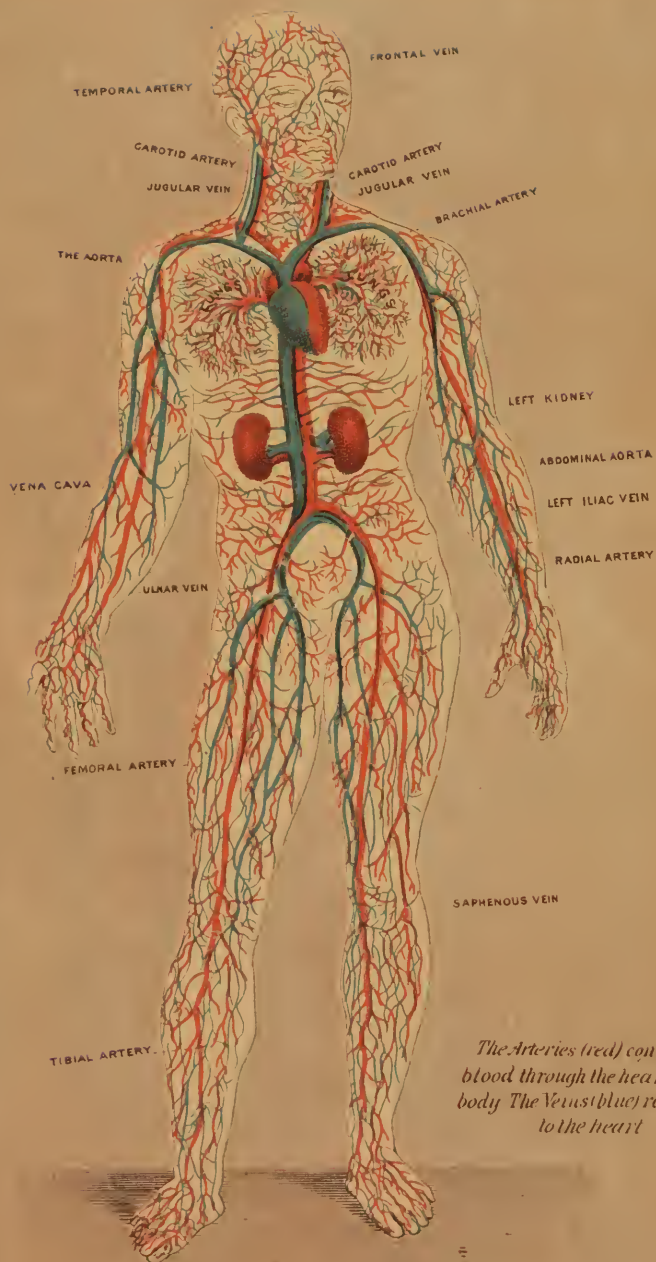
“Accordingly, when the surgeon places a ligature upon a wounded vessel, he stops the circulation through it. The blood is imprisoned in the neighborhood of the ligature, and soon afterward coagulates and blocks up the cavity of the vessel with its solidified fibrine. After a time the ligature separates and is thrown off, and the wounded parts unite by the healing of the tissues.

“We see, therefore, that the coagulation of the blood is a property that belongs to the fibrine, and that it is spontaneous. As soon as the fibrine is formed it possesses this property, by which it is distinguished from all other substances. It is not manifested immediately, for it requires a certain time for its completion; but, owing to the very nature of the fibrine, wherever it may be, within a short period after it is shut off from the circulation it exhibits this peculiar character, and coagulates inevitably.

“Why, then, does it not coagulate in the vessels, and thus stop the circulation of the blood?

“To understand this, we must remember that the history of all the animal substances in the living body is one of incessant change. None of them remain the same, but all undergo successive transformations. The albuminose formed in digestion is no sooner taken up by the blood-vessels than it is converted into albumen. The oily matters absorbed with the chyle, and the sugar produced in the liver, are also rapidly decomposed, as we have seen, and disappear in the circulation. What is destroyed in this way for the purposes of nutrition is constantly replaced by a fresh quantity formed in the same organs.

“This is also true of the fibrine. That which is circulating in



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THE CIRCULATION - THE AORTA & ITS BRANCHES.

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THE CIRCULATION OF THE BLOOD IN THE HUMAN BODY.
AS VIEWED FROM THE FRONT.

the blood-vessels to-day is not the same fibrine which was there yesterday, but a new supply, freshly produced in the process of daily nutrition. It is estimated by physiologists that all the fibrine which exists in the blood is destroyed and reproduced at least three times over in the course of a single day. What the new substances are which are formed by its decomposition is still unknown, for we cannot yet follow out all the details of these changes which take place so rapidly in the living body. But there is every reason to believe that the renovation of the fibrine in the blood takes place as constantly and rapidly as that of its other ingredients.

"The blood, therefore, does not coagulate while the circulation is going on, because its fibrine is being incessantly altered and converted into new substances. It has been found that in certain of the internal organs, especially in the liver and kidneys, the fibrine disappears, and that little or none of it is contained in the blood returning from them. When we come to learn with what rapidity the circulation is carried on, we shall easily understand how coagulation may thus be prevented. But if the blood be withdrawn from the circulation altogether, or confined in any part by a ligature, then its fibrine can no longer go through with the natural changes of its decomposition, and it accordingly coagulates, as we have above described.

"*Quantity of the Blood.*—The entire quantity of blood in the vessels is about one-eighth part, by weight, of the whole body; so that in a man weighing 140 pounds, the quantity of blood is very nearly 18 pounds. The quantity of blood, however, as well as its composition, varies somewhat at different times. Soon after digestion it is considerably increased; for it has absorbed all the nutritious materials taken with the food, and these materials must necessarily pass through the blood in order to reach the tissues. After long abstinence it is diminished in quantity to a corresponding degree. For the same reason, its composition varies to a certain extent, since its different ingredients will diminish or increase, according as they have been discharged or absorbed in greater or less abundance.

"*Effects produced by Loss of Blood.*—Only a small proportion of the blood in the body can be lost without causing a serious effect upon the system. Generally speaking, the loss of one pound of blood causes faintness, and that of a pound and a half or two pounds is followed by complete unconsciousness. If the bleeding be then stopped, the patient usually recovers, but if a still larger quantity of blood be lost, recovery becomes impossible.

"When the strength, however, has been very much reduced by

excessive bleeding, it may sometimes be restored by injecting into the blood-vessels healthy blood from another person. This is called the 'Transfusion of the Blood.' In several instances, where the vital powers were nearly exhausted, life has been restored by this operation.

"Two different kinds of Blood in the Body.—Finally, there is a most remarkable difference in the appearance of the blood in different parts of the body. In one half of the circulation, that is, in all those vessels which are called 'arteries,' it is of a brilliant scarlet hue; while in the 'veins' it is of a deep bluish-purple, almost black color. These two kinds of blood follow each other in the circulation, changing alternately from one color to the other; so that, although there is always red blood in the arteries, and always blue blood in the veins, yet the same blood is alternately scarlet and purple, as it passes from one set of vessels to another."

THE ORGANS OF CIRCULATION.

THE HEART.

This organ is situated nearly in the centre of the human body, occupying a place in the chest rather to the left of the centre of this cavity, and lying immediately upon the diaphragm or muscle dividing the chest from the cavity below, with its apex or point inclining towards the bony extremity of the sixth rib of the left side, and against which it may sometimes be felt to strike. In this situation the heart is sustained by the large blood-vessels which originate from its base; but its point is entirely free, and it is surrounded by a strong membranous bag or purse, which is firmly fastened to these vessels, and to the diaphragm. It serves to preserve the moisture of its surface, by constantly exuding a fine thin lubricating fluid, and thus lessens its friction with the parts in contact with it; at the same time that it supports the heart itself when under violent action.

The heart consists of four cavities or chambers for receiving the blood, and for giving it a fresh impulse. Two of these cavities are on each side, and communicate with each other by an opening through the partition which divides them; but they are totally distinct from the cavities on the other side, although they correspond with them in shape, structure, and use. The heart may be said, therefore, to consist of two distinct organs; the one on the right for sustaining the circulation through the lungs, and the other on the left for impelling it through the rest of the body. The first cavity on the right side of the heart is called its auricle, and receives the terminations of two large veins which reconvey the blood returning

from all parts of the body to the heart. This cavity may be viewed as a reservoir for the returning blood, which it discharges into the other cavity of the same side, called the right ventricle. The opening into the ventricle is closed by a valve, which is so contrived as to admit the blood, but to prevent its return. The ventricle has another opening leading from it into an artery, and the right ventricle, when filled with blood from the auricle, contracts and forces it into the artery of the lungs; and (that it may be able to propel the blood with sufficient force into this tube) it is constructed of greater strength than the auricle, having its walls firmly supported by fleshy columns, which extend across the cavity of the ventricle, and connect its opposite sides together. There are valves also situated at the commencement of the artery of the lungs, and for the same use as in the auricle, viz., to prevent the blood from returning into the cavity, whence it had just been expelled.

This description of the right side of the heart will suffice for that of the left; both being constructed nearly in the same manner, having corresponding cavities or chambers, and for similar purposes. But it ought to be observed, that as the right auricle receives the blood returned to the heart from all the parts of the body; and the ventricle of the same side propels it into the vessels of the lungs; so the auricle on the left side of the heart receives this blood from the lungs, by four veins which open into it, while it is the office of the left ventricle to force it into a new circulation along the extent of the whole body. The left ventricle is stronger than the right, because it has a greater resistance to overcome.

The substance of the heart is muscular, being composed of red and elastic fibres, similar to those which constitute the other muscles of the body; but so arranged as to admit of contraction in all directions, and with such a peculiar modification of the excitable principle as to be contracted and dilated alternately through the whole of life; so that the circulation never ceases. The heart, in fact, possesses the contractile power in a higher degree than any other muscle. It is called into action partly by the mechanical distension of the blood, although principally, no doubt, by its peculiar qualities as a stimulus. The auricles of each side are filled at the same instant, while the ventricles are at the same time emptying themselves. The right auricle, when filled, contracts, and urges the blood onward into the now relaxed ventricle; the last, when distended, contracts in its turn; the flaps of the valves are thrown back, and close the opening into the auricle, and the blood has no other outlet but into the pulmonary artery, which leads to the lungs; where it is to be changed in its color and other properties. The artery is now dilated, its valves are

instantly closed, and prevent the return of the blood into the ventricle. Then the artery contracts, and impels its contents onward, to make way for a new wave of blood. During this time corresponding motions take place in the left side of the heart, with this difference only, that the left ventricle forces the blood into the aorta, or great artery of the body, after it has undergone its due changes in the lungs, through which it was circulated by the force of the right ventricle.

It is observable, that this motion of the heart not only survives that of the organs of voluntary motion, but continues a considerable time even after it is separated from the body. Nay, after it has ceased to palpitate, yet its contraction and dilatation may, by the application of stimuli, be alternately renewed and continued some time longer. Hence in drowning and suffocation, though the pulse be imperceptible, and life apparently extinguished, the heart still preserves this latent power, or susceptibility of motion; for though unable to propel the blood through the vessels of the body, it needs only to be excited by suitable stimuli to renew its action. In the first rudiments of life, even before the brain is formed, a pulsating point or spot shews the embryo heart in miniature, and marks its primeval irritability, as a sure pledge of vitality. The heart of the chick begins to move before we can presume that there is any organ for distributing the nervous power. The palpitating point is the heart of the chick, and it is seen beating while its body is but a rude, unformed, and gelatinous mass.

As this singular organ exhibits irritability the first, so it never relinquishes it till the last, and may therefore be considered as the first part of the animal which lives, and the last which dies.

In animals with cold blood, this irritability is very great, and continues a long while. The heart of a viper will palpitate when taken from the body, twenty-four hours; and that of a turtle, thirty, or longer. In the warm blooded animals, it moves till the fat is rendered stiff by the cold, when the motions of the heart and all the other muscles commonly cease.

THE ARTERIES.

From the ventricles of the heart arise two large elastic tubes, called arteries, which afterwards divide like the trunk of a tree, into innumerable branches. The one commencing at the right side of the heart, conveys the blood to the lungs, while that which is continued from the left ventricle, carries it to all the other parts of the body. The arteries are composed of three membranes called coats, an external coat, a middle coat, which is muscular, and an inner one, which is smooth. They partake of the nature and action of the heart, for

being dilated and irritated by the blood impelled into them from the heart, they contract, by means of their muscular coat, upon this blood, and thus propel it to all parts of the body, for their nutrition, and the various secretions. This dilatation and contraction is called the pulse, and is perceptible in the trunks and branches of the arteries, but not in their minute ramifications, except when inflammation is going on.

THE VEINS.

The blood, having been conveyed by the arteries, even to the extreme parts of the body, for its nourishment and repair, the surplus is carefully returned to the heart and lungs, to be prepared for a new circulation; and for this purpose are the veins provided. They commence from, or rather are continuous with the minute arteries, and as they approach the heart, they run into larger but fewer tubes, till at last they terminate in it by six great trunks. Two of them empty their contents into the right auricle; the one collecting the blood from the vessels of the head and the upper extremities, while the other ascends with it from the lower parts of the frame. These are loaded with venous blood; but the remaining four veins pour the blood from the lungs into the left auricle; it is now changed into a bright red color, and is called arterial blood, because it has the appearance with which it is always found in arteries; so that in the lungs the office of the arteries and veins is transposed; the former conveying venous blood, while the latter are filled with arterial blood.

The continuation of the extreme branches of the arteries to those of the veins, resembles two trees united to each other at their tops, while their trunks are so disposed as to terminate in a common point, the heart; and if we suppose that both these trunks and their ramifications are hollow, and that a fluid is incessantly circulating through them, by entering into one of these trunks, and returning through the other, we can conceive how the blood is circulated through the human body.

The veins do not pulsate, like the arteries. The blood which they receive from those vessels flows through them very slowly, and is conveyed back to the heart by the current of blood from the arteries, and the contraction of the muscles, among which they ramify. It is prevented from flowing backwards in the veins by valves, which constitute one of the great distinctions between these vessels and the arteries. The valves are formed by the innermost membrane of the vein rising up in a fold into the cavity of the vessel, like a curtain, and stretching itself along the vein so as to form a kind of crescent

which permits the blood to flow on towards the heart, but immediately stops it if attempting to flow back.

The absorbents are thin and pellucid vessels arising from the various surfaces of the body, and running to a common trunk or tube, called the thoracic duct, because it lies principally in the thorax or chest, which empties itself into a vein a little before it comes to the heart. They are distinguished into two kinds, the lacteals and the lymphatics; the former absorb the nutriment from the intestines, and convey it by the thoracic duct into the circulation, while the latter vessels take up the colorless fluid, called lymph, (whence they receive their name) and convey it from all the parts of the body to the same point. Thus the parts of the blood which either from their thin, oily, or nutritive qualities, had been separated from the red, circulating mass, and thrown out by the secreting or exhaling arteries, are absorbed, after having performed their various uses, and are again conducted by the lymphatic vessels back into the circulation to mix with the blood; and the lacteals, or absorbing vessels of the intestines, drink up the milky fluid formed from our food, and carry it to the heart and lungs to be changed into blood.

Hence we see that absorption is a function necessary to the circulation, and highly essential to life. It completes the circle in which our fluids move, and supplies the constantly decreasing blood with new parts. But there are other purposes, which this curious and beautiful operation of our frame accomplishes. The skin is full of small pores which are the mouths of lymphatic vessels. Through these are absorbed properties from the surrounding bodies, as from the air, water, or such substances as may be in contact with the skin, and are thence conveyed into the system for its refreshment, or cure; for instance, medicines rubbed on the skin enter the body, and affect the frame.

But a grand, constant, and universal agency of our lymphatic system, is the removal of old, useless, and worn out parts, and the making room for new ones. This astonishing power of our frame to change its withered, for sound, healthy particles, is not confined to any one part or organ of the body, but is possessed by all. Delicate membranes, and strong tendons, the soft moving muscle, and the hard, solid, inactive bone, are all acted upon by these modellers of our frame, throw off the old exhausted particles of which they were composed, and acquire fresh ones. By this constant and general renovation of all its parts, which endures through life, are the health and vigor of the whole body preserved.

Absorption also helps to remove those injuries which happen to

the frame by accidents. If a tumor arises from a blow, the absorbents will soon begin to act, and eventually remove the swelling. A fluid poured from its ruptured vessel will be absorbed by the lymphatics, and carried again into the circulation. Even parts of the body which are diseased, or have their organization destroyed, and are consequently unable to perform their functions, will have their dead particles carried off by absorption, and room made for fresh, healthy depositions. The black or greenish spot which is left by a bruise, is owing to blood having exuded from a ruptured blood-vessel. Its disappearance is the effect of the action of the absorbents, which is at all times, and in a similar degree, operating in every part of our body, but not equally obviously. According to the proportion which the action of the absorbing vessels bears to that of the arteries, by which fresh supplies of nourishment are brought to all parts, will the size of the body depend. Hence in youth the absorbents depositing more nutritious matter than the arteries convey away, the frame grows and expands. In middle age there being a balance between the actions of the two systems of vessels, no change can take place; but the absorption being greater in old age than the nutritious action of the arteries, the body shrinks from its usual dimensions, the limbs become wasted and shriveled, and the whole frame totters towards the grave.

The absorbents are full of valves like the veins, for preventing the flowing back of the lymph; and the power by which they drink up this fluid, and with it the decayed and dissolved solids of the body, is supposed to depend principally on their muscular structure; the mouths of these vessels being filled with the particles of the fluid, their coats contract, and their contents being pressed upon at the sides, and prevented from returning by the valves, are necessarily propelled towards the termination of the absorbents in the veins, there to be mixed with the blood.

THE GLANDS.

These organs are designed to separate various substances from the blood, and are situated in different parts of the body. They differ in size, shape, and construction, according to the peculiar kind and quantity of fluid which is meant to be separated from the mass of blood. Thus while some are of a small and roundish figure, others are much larger and variously formed. Each of the small glands consists, first of an artery for supplying the gland with blood, and also for separating, by the peculiar disposition of its extremity, a particular kind of fluid from this blood; next of an excretory duct

or canal which goes out of the gland, and conveys thence the secreted fluid, by the contractility of its coats; and lastly, of a vein for returning to the circulation, the blood remaining after the secretion has been accomplished.

Of this simple kind are most of those little glands, which are found in different parts of the body, as under the skin, in the mouth, nose, eye, &c. and which, by secreting an oily or mucilaginous fluid from the blood, keep the parts on which they lie constantly moist, prevent friction, defend them from the air, and from the floating particles which it may contain. That the vessels necessary to effect secretion may not be extended into long and inconvenient lines, they are skilfully coiled into a small space, and connected together by cellular substance, and assume the roundish and even appearance, which those little glands exhibit.

The large glands consist principally of an aggregation of the small ones, but have the following peculiarities of general structure; 1st, all the arterial branches which bring the blood to the gland, and afterwards become the organs of secretion, arise from one great trunk, which does not divide till it has reached the body of the gland; 2nd, the excretory ducts of the various small glands, composing the great one, all run to unite into one large, common tube or canal for conveying away the collected secretions of the little glands; and 3rd, the branches of the veins, corresponding with those of the artery, all pour their blood into one great trunk, by which it is returned into the circulation.

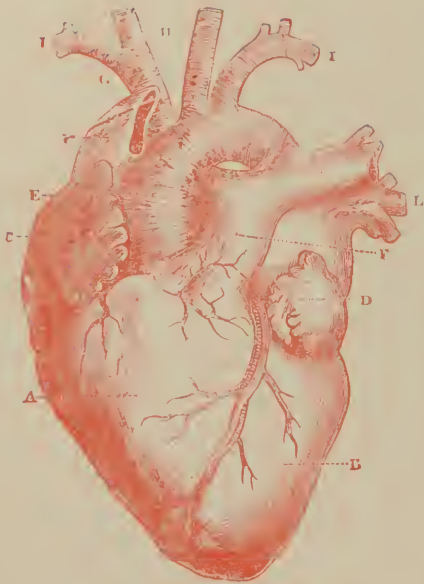
This process of separating various bodies from the mass of blood is termed secretion, and it is a most important function; for every animal production is a secretion, whether there be a complicated apparatus for forming it or not. Thus bone, flesh, fat, skin, &c. are as strictly secretitious as the urine, the bile, or the tears; only that in the latter case, for the sake of compactness, or because the secretion was wanted in one spot for a specific purpose, the apparatus for producing it is limited; while in the other instances, the substances are formed in many parts of the body.

The term gland has been confined to the congeries of vessels, &c. above described; but as we have seen parts the least peculiar in their structure perform the functions of a gland.

In general the substances they secrete are of immediate use in the animal system, and are so either constantly or occasionally. In the latter case, a reservoir is attached to the gland in which the secretion is accumulated till it is wanted.

There are other secretions which separate useless or noxious bodies from the blood: these are termed excretions: such are the

Plate XVII.



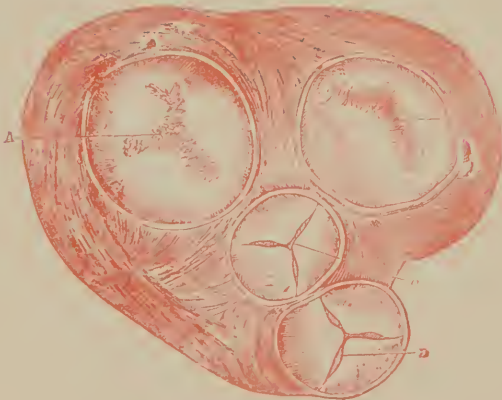
THE HEART.

A, the right, B, the left Ventricle; C, the right, D, the left Auricle.



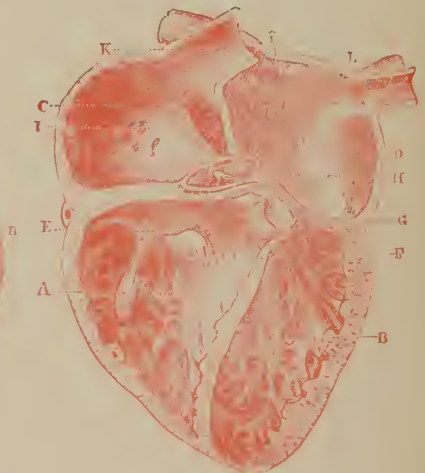
CIRCULATION OF THE BLOOD.

A, descending and B ascending the Vena Cava; C, right Auricle; D, right Ventricle; E, Pulmonary Artery; F, F, Lungs and Pulmonary Veins; G, left Auricle; H, left Ventricle; I, K, Aorta.



VALVES OF THE HEART, THEIR SHAPE AND FIBROUS STRUCTURE.

A and B, Tricuspid and Bicuspid Valves; C, Semi-lunar Valves of the Pulmonary Artery



CHAMBERS OF THE HEART.

A and B, the right and left Ventricle; C and D, the right and left Auricle; E, F and G, Tricuspid, Bicuspid and Semi-lunar Valves; H, Valve of the Aorta; L, L. Pulmonary Veins.

THE HEART, ITS VALVES AND CIRCULATION OF BLOOD.

urine, the perspirable matter, and some others. They are the vehicles by which worn out particles are removed, as well as noxious ones.

The manner in which the glands effect secretion is wholly unknown. They are composed of similar vessels, have a common fluid to secrete from, and still they separate substances wholly differing from each other and from the blood.

Their mechanism is too minute for our inspection; and it never will be in our power to examine the machine when at work; all our observations must, therefore, be confined to the dead body. Hence we have little hope of penetrating this mysterious process, although we may conceive in general, that vessels of different sizes, lengths, convolutions, and angles of separation from their trunks, will be fitted to deposite different compounds. In truth the body is a complicated laboratory, where chemical and other changes are incessantly taking place.

REVIEW OF THE CIRCULATION.

The celebrated Harvey was the discoverer of the circulation of the blood. "Seeing," says he, "that the blood passed from the arteries in abundance into the veins, unless these were to empty themselves, and the others to be refilled, that ruptures of vessels every where would take place, which does not happen, I began to conjecture there must be a circular motion of the blood; but this doctrine was so new and unheard of, that I feared much detriment might arise from the envy of some, and that a number would take part against me, so much does custom and doctrine once received, and deeply rooted, pervert the judgment. However, my resolution was bent to set this doctrine forth, trusting in the candor of those who love and search after truth."

No sooner had he published his discovery of the blood's circulation, than prejudice assailed him. Few physicians, and none passed the age of forty, believed his doctrine, which they stigmatised as an heretical innovation in philosophy and physic. Even his practice began to decline. But he had the happiness to outlive the clamors of ignorance, envy, and prejudice. Professional men were at last ashamed to own that they had ever disbelieved his doctrine, which was essentially the same as that which we have previously described.

The circulation of the blood can be easily seen, by the help of a microscope, in the bodies of different creatures, which are either

wholly, or in part transparent; and the observations made by this means are preferable to any others we can make, since, in dissections, the animal is in a state of pain, or dying; whereas in animals viewed in the other mode, all is left in its usual course, and we see what nature does in her own undisturbed method. The tail of the newt, or water-lizard, affords a very entertaining prospect of the circulation of the blood, through almost numberless small vessels. But no object shows it so well as one of those animals while so young as not to be above an inch long; for then the whole body is so very transparent, that the circulation may be seen in every part of it, as well as in the tail; and in these subjects nothing is more beautiful than the course of the blood to and from the toes, where it may be traced all the way with great ease. Near the head there are also found three small fins, which afford a very clear view of the circulating blood. These are all divided like the leaves of the common fern, and, in every one of their branches, the blood may be very accurately traced, running to the end through the artery, and then returning back again by a vein of the same size. As the vessels are very numerous and large in this part, when the third or fourth magnifier is used, there are sometimes seen thirty or forty channels at once. The large size of the globules of blood in the newt, and their fewness in proportion to the quantity of serum, renders them particularly distinct; and we remark that their figure, as they are protruded through the vessels, changes in a very surprising manner.

The impetus, occasioning the circulation, is great enough in some animals to raise the blood six, seven, or eight feet high from the orifice of a divided artery; and that the force of the heart must be very great, appears also from its expelling about eight pounds and twelve ounces every minute, with a velocity equal to one hundred and fifty-nine feet in that time, besides overcoming a great resistance in distending the arteries. The space of time wherein the whole mass may ordinarily circulate, is not ascertained. Some of the latest writers however, state it thus. Supposing the heart to make two thousand pulses in an hour, and that at every pulse there is expelled an ounce of blood, as the whole mass is not ordinarily computed to exceed twenty-four pounds, it must be circulated seven or eight times in the space of an hour.

Such is the circulation of the blood, and the astonishing arrangement and powers of its organs. Whether we consider the force which they exert, their never wearying action, or the admirable wisdom with which they are disposed, the subject forcibly impresses the mind. Here we find one of the most noticeable and peculiar animal

Plate xviii.



MUSCLES OF THE FACE. Page 69.

aa. Forehead; bb, Eyebrow; cc, Eyelid;
 ddc. Nose; kkkk, Lips; oopp, Chin, Etc.

functions. Far less magnificent in their plans, and less skillful in their execution, hydraulics offer us but faint analogies with it, in those machines, by means of which water is distributed into every quarter of a great city. Upon the whole contrivance of the circulation we may truly say that the Creator has impressed distinctly his own signet.

ORGANS OF RESPIRATION.

We will now consider one of the most beautiful and important functions of the animal body; upon which life itself immediately depends, and which is constantly replenishing all its springs. Breathing, like the circulation of the blood, is essential to the preservation of the animal. The one supplies it with fresh nutriment, and thus prevents decay. The other animates the whole of the machine, and invigorates all its movements. To comprehend this function, it will be necessary to extend our views to the nature and properties of the air engaged in respiration, and to those influences which it has upon the animal body. We here describe the organs of respiration, and the manner in which it is performed in man, and in other creatures.

THE TRACHEA OR AIR-TUBE.

The trachea, or windpipe, by which the air is conveyed from the mouth and nostrils into the lungs, has nearly the same construction in quadrupeds as in man. It is formed of cartilaginous rings, and an elastic ligamentous membrane. The rings are intended to keep the arca of the tube constantly open, but do not describe a circle; the back part of the windpipe, or that side of it which lies next to the canal leading from the mouth into the stomach, being composed almost wholly of the elastic membrane, for the greater convenience in the act of swallowing. This membrane also connects the cartilaginous rings together, and completes the sides of the tube. The upper part of the trachea, as we have before observed, is peculiarly formed for producing the voice, and has a small thin cartilage placed over the mouth of the tube, which occasionally shuts down, and closes the passage to the lungs, as in swallowing. From this part the air-pipe descends along the fore-part of the throat, till it passes into the cavity of the chest, to enter the lungs. Its internal surface is constantly kept moist, and defended from the air when passing, by a mucus which is poured out from small glands every where strewed

on the membrane lining this tube. A similar mucus lines all the passages which lead to the internal cavities from without.

When the air-pipe has nearly reached the lungs, it divides into two great branches. One of these goes to each lung, and is distributed through the whole of its substance, in an infinite number of ramifications, all constructed in a manner similar to the original tube, till they become very minute; when instead of having cartilaginous rings, they are found to be wholly membranous. These small branches terminate in innumerable cells, which communicate with each other, and give the lungs the appearance of a honey-comb when its substance is cut into, particularly in some animals where the cells are large; as in the turtle.

EXPLANATION OF FIGURE III.

HEART AND LUNGS.

This Plate shows the Larynx, Wind-pipe, Heart, and Lungs, and the large vessels by which they are connected. L. Larynx, or Vocal-box; the organ in which the voice is formed.

T. The Trachea, or Windpipe; connecting the Larynx to the Lungs.

A. The Aorta, or Large Artery of the Heart; arising from the Left Ventricle

P. Pulmonary Artery, or Artery of the Lungs; this Artery arises from the Right Ventricle of the Heart, and divides into two branches, one going to each Lung.

C. Left Auricle of the Heart.

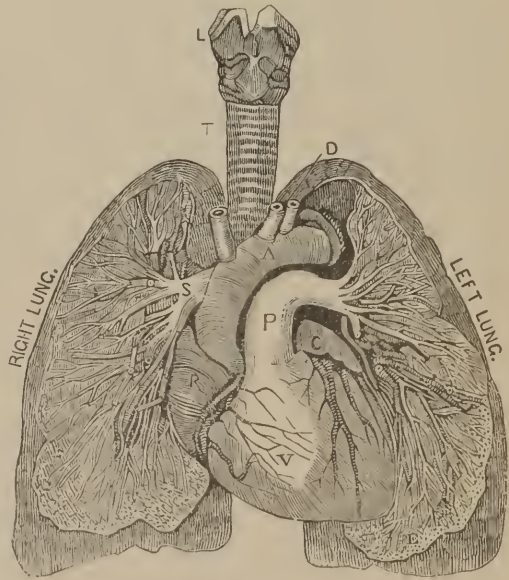
R. Right Auricle.

E. Air Cells of the Lungs.

V. Right Ventricle of the Heart.

D. The cut ends of Arteries going from the Heart.

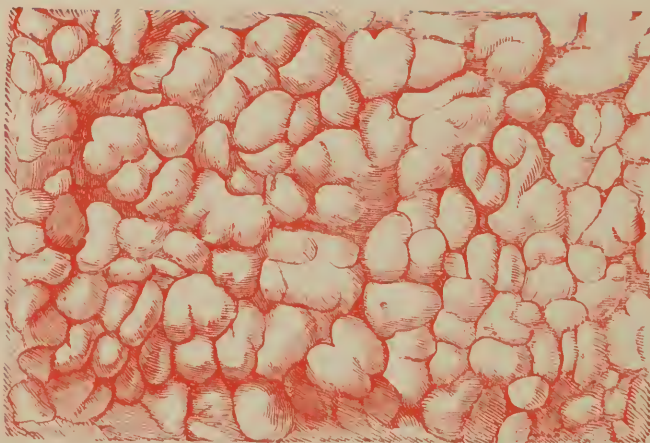
S. Small branches of the Right Pulmonary Artery; a portion of each Lung having been cut away to show these branches and the Air Cells.



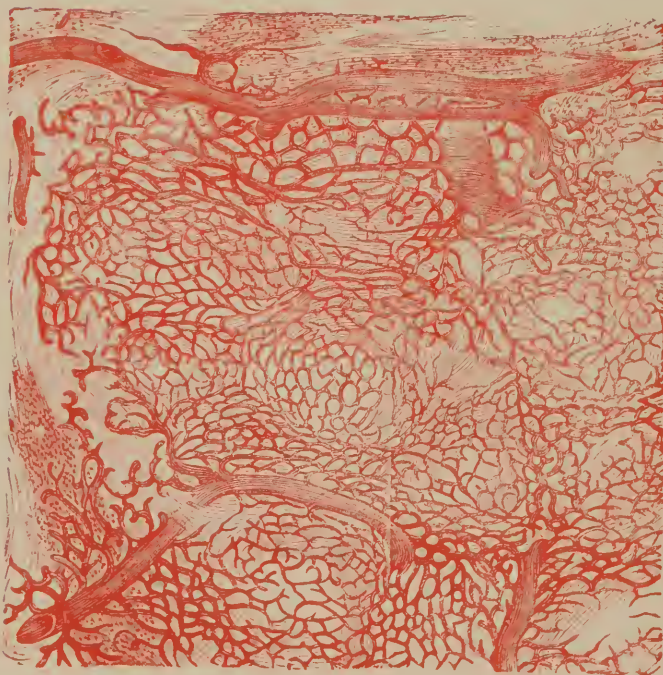
THE LUNGS.

We have already observed that the trunk of the body is divided into two great cavities by the diaphragm, which is a horizontal fleshy partition, and that the superior cavity is called the thorax or chest, and contains the heart and organs of respiration. This cavity is again divided into two lesser ones, by a strong membranous partition, which runs in a direction perpendicular to the diaphragm, and extends from the back-bone to the fore-part of the chest. It is composed of the membranes lining the two cavities, which being applied to each other laterally, like two bags, form a partition for

Plate xx.



AIR CELLS OF THE LUNGS LARGELY MAGNIFIED, Page 132.



LUNG PLEXUS (NET WORK,) WITH BLOOD VESSELS. Page 132.

separating and sustaining the lungs, and for preventing them from pressing upon each other, in the different positions of the body. The laminae composing this partition do not every where adhere together. At the lower part of the chest they recede from each other, to make room for lodging the heart, and at the upper part of the cavity they receive between them a gland called the thymus, the use of which in the animal economy is not yet ascertained. The internal surface of the chest, like all other cavities, is kept constantly moist and smooth, for the greater safety of the delicate organs of respiration, by means of this lining membrane, which is called the pleura, and which exudes a fine watery fluid, preventing friction and adhesion of the lungs to the sides of the chest.

The lungs are the principal organs of respiration. They are two in number, one occupying the right, and the other the left cavity of the chest; but they respire by one common tube, the windpipe. Their texture, as may be seen in those of any quadruped, is soft and spongy, being composed of blood-vessels branching out with exquisite minuteness upon the sides of the air-cells. They are united into a mass of cellular membrane, and so disposed, that the blood can extract from the air certain properties which shall be hereafter explained.

RESPIRATION.

Respiration consists of inspiration, or the ingress of the air into the lungs, and expiration, or the egress of the air from the lungs; it commences at birth, and continues through life. In man and quadrupeds it is performed in the following manner.

The diaphragm, dividing the chest from the abdomen, is strong and muscular, and can act with great power in enlarging the cavity of the chest. It is convex towards the lungs, and concave below. When it contracts, its surface becomes nearly flat, and of course the chest is deepened. At the same instant the intercostal muscles contract, and raise the lower ribs which are moveable towards the upper one which is more fixed. When the ribs are raised, they are so contrived as to be drawn outwards, and the cavity of the chest is dilated laterally.

Thus we see that when we inspire the chest is enlarged in all directions. The lungs are suspended in the cavity, and follow all the motions of the parts which enclose them, for when the pressure of the ribs is removed, the air they contain expands by its elasticity, and the external air rushes in to restore the balance. The lungs are now in a state of inspiration, and they are emptied by the following process.

When the diaphragm contracts, it would lessen the abdominal cavity as much as it enlarges that of the chest if its loose enclosure did not give way by protruding.

This protrusion of the belly excites the abdominal muscles to react. Their contraction pushes up the now relaxed diaphragm into the chest, and as they are attached to the lower edges of the ribs, they pull them down with great power, and thus lessen the cavity of the chest. The lungs are compressed, and the air which they had just received is now expelled. This is expiration.

It is pleasing and instructive to observe this admirable alternation of motion by which the mechanism of respiration is effected. The diaphragm and intercostal muscles co-operate in enlarging the chest; they contract and are relaxed in the same instant; while the abdominal muscles seize, as it were, the moment of their relaxation to counteract their motion, and to diminish the size of the chest.

Respiration is performed in the mode above described; in animals which have a muscle, the diaphragm is for this specific purpose. Breathing is essential to all animals, though it is effected variously in different creatures, in correspondence with that indefinite diversity of forms and of habits with which animal existence is endued.

In the valuable treatise before quoted, respiration is thus clearly described:—

“Quantity of Air used in Respiration.—At every respiration twenty cubic inches of air ($\frac{1}{3}$ of a pint) are taken into the lungs. If we count the entire number of respirations in a day, including those caused by muscular exertion, this will give about 600,000 cubic inches, or 350 cubic feet of air which passes and repasses through the lungs in every twenty-four hours. This is nearly eighty times the bulk of the whole body.

“Character of the Respiratory Movements.—The movements of respiration are *involuntary*. The diaphragm descends and the chest expands without any exertion of the will, and even without our knowledge. From the instant of our birth to the last moment of existence, during the activity of our waking hours and in the unconsciousness of sleep, they continue in untiring and ceaseless operation. For the necessity of respiration is not occasional, but incessant; and the performance of this function, therefore, is not confided to the will, but is provided for by an involuntary action, which requires no attention and produces no fatigue.

“It is true that we can exercise a partial control over the movements of respiration; that is, we can hasten or retard them at will. But this is only for a very short time. If we try to breathe much more rapidly than is natural, say one hundred times a minute we

shall soon find how laborious and exhausting the movements become. On the other hand, if we stop respiration altogether, we at once feel an internal impulse which calls for its renewal, and which grows rapidly stronger and more imperative, until it becomes at last irresistible. There are few persons who can voluntarily suspend the breath for more than thirty or forty seconds at a time.

“Such is the manner in which the movements of respiration are performed. Now let us see what happens while the air is thus taken into the cavity of the chest.

“*Change in the Air during Respiration.*—In the first place, as the air penetrates into the lungs it is robbed of its oxygen. This substance disappears, so that the air which has once been drawn into the chest, and again expelled with the breath, no longer contains it in due proportion.

“What has become of the oxygen which thus disappears from the air in respiration?

“It is absorbed by the blood. For the blood-vessels coming to the lungs are distributed everywhere in the minute spaces between the air-vesicles, and envelop their walls with an abundant vascular network. If we recollect the great extent of surface represented by the tissue of the lungs, we shall see that the blood circulating in their vessels is spread out over a corresponding surface; and that, in a thousand minute currents, it moves through the lungs almost in contact with the air contained in the vesicles. It is as if the blood were sprinkled through the air in a fine shower; so that every particle of the blood and every particle of the air are brought into the closest proximity. At this moment the oxygen leaves the air and enters the blood over the whole internal surface of the pulmonary tissue.

“*Change in the Blood during Respiration.*—At the same time a most remarkable change takes place in the blood itself.

“The blood which is distributed to the lungs is venous blood. It is that which has already circulated through the organs and tissues of the body, and has served for their nutrition. From them it is collected by the veins, brought back to the heart, and from the heart distributed to the lungs. At this time it is of a dark blue or purple color, approaching to black.

“Now, as this venous blood enters the lungs and takes possession of the oxygen contained in the air-vesicles, it changes from a dark blue to a brilliant scarlet color. This change is instantaneous and complete; so that the blood, as it leaves the lungs on one side, is entirely different in appearance from that which is entering them on the other.

“After the blood has passed through the lungs, and has changed its color from blue to red, it returns to the heart, and is again distributed throughout the body by another set of vessels, which are called the “arteries.”

“Accordingly, there are always two kinds of blood in the general circulation, of different colors and occupying two different sets of vessels. The blood in the veins is blue, and is called *Venous* blood; that in the arteries is red, and is called *Arterial* blood. The blood is also constantly changed from venous to arterial while passing through the vessels of the lungs.

“It is for this reason that the lips turn purple and the face assumes a dark ashen color whenever the breathing is seriously obstructed. For the blood, no longer becoming arterialized, retains its venous hue, and communicates a dark color to all the transparent and vascular tissues.

“But the change in color is not the only difference between these two kinds of blood. The venous blood, which has already circulated through the body, has lost its vital properties. It has expended a part of its substance in the nourishment of the tissues, and is no longer fit for the maintenance of life.

“What is it that the blood has thus lost in passing through the tissues which is necessary to its vitality?

“It is its oxygen.

“For the arterial blood, as it passes out from the heart to be distributed throughout the body, carries with it the oxygen which it has absorbed in the lungs. It arrives at the tissues charged with this vivifying principle, and the tissues immediately seize upon it and appropriate it to themselves. Thus the blood, as it passes through the circulation, gives up its oxygen and returns to the venous condition. There is, therefore, a double change going on incessantly in the blood in the different parts of the body. In the tissues it loses oxygen, and changes from red to blue; in the lungs it absorbs oxygen, and changes from blue to red.

“*Action of the Blood Globules in Respiration.*—Now the ingredients of the blood which are most active in producing this change are the *Blood globules*. It is these little bodies which take the oxygen from the air, and fix it in their own substance for the renovation of the blood. They are the carriers, which load themselves with oxygen in the lungs, to transport it afterward to distant parts in the current of the circulation. As all the color of the blood resides in them, we easily see why this color should change with the changing constitution of the globules themselves.

“It is by the process of respiration, accordingly, that the blood

is kept constantly renovated and restored to the arterial condition.

“*Quantity of Oxygen Consumed.*—The importance of oxygen to the living body is shown by the quantity which is consumed. At every inspiration one cubic inch of oxygen is withdrawn from the air and absorbed by the blood. This amounts in the course of an entire day to about $17\frac{1}{2}$ cubic feet, or by weight a little over one pound.

“*Evolution of Carbonic Acid.*—But, at the same time that oxygen is absorbed from the air in respiration, another substance makes its appearance in the lungs, and is expelled with the breath. This is *carbonic acid*. It is a gas, like oxygen, but differing from it in its properties. It is the same gas which is formed in the fermentation of bread, wine, beer, and all substances containing sugar. It is produced from burning coal and candles, and many other combustible bodies. It is sometimes exhaled from the surface of marshy pools, and often collects at the bottom of old wells. It is not fit for respiration; and when a man is accidentally caught in an atmosphere composed of carbonic acid, as sometimes happens in cleaning beer-vats or in repairing old wells, he at once becomes insensible, and soon dies by suffocation.

“This gas, as we have said, is found in the breath. No less than one twenty-fifth part of the air passing out of the lungs consists of carbonic acid. This is immediately diffused through the atmosphere, or carried away by its movements; and the fresh air then taken into the lungs is again loaded with carbonic acid and expelled in its turn. This process goes on with every successive respiration; so that in the course of an entire day the amount of this gas discharged with the breath is nearly $15\frac{1}{2}$ cubic feet, or by weight about one pound and a half.

“Now the carbonic acid so produced is formed in the tissues. It is absorbed from them by the blood, carried by the blood to the lungs, there exhaled into the pulmonary vesicles, and finally discharged with the breath. It is a useless and exhausted material which the tissues have rejected, and which is therefore expelled from the body in the process of respiration.

“*Exhalation of Water and Animal Vapors with the Breath.*—Besides carbonic acid, the breath also contains a peculiar animal vapor, which is produced in the interior of the body. Though this vapor is in very small quantity, it is sufficient to give to the breath a faint but perceptible odor. There is also some water discharged from the lungs in a gaseous form. The breath therefore is damp; and if we breath upon a mirror, its polished surface becomes dimmed from the deposit of the watery parts of the expired air.

ANIMAL HEAT.

The temperature of the body is about 100 *degrees Fahrenheit*. This temperature remains the same in winter and in summer, in the Tropics and at the Poles.

The animal heat is not peculiar to man. It is a quality of all other animals. Those animals which, like reptiles and fish, have a temperature much lower than that of man, are called *cold-blooded*.

Animal heat is the result of *all the chemical changes of nutrition going on in the body*.

Some organs of the body are warmer than others. The liver is now regarded as the warmest of the organs.

Animal heat is regulated by the *perspiration*.

There are in the body over 2,000,000 perspiratory glands. The length of tubing connected with them has been estimated at *two and a half miles*. Through these glands the perspiration is always being secreted. Most of the time it is invisible and insensible. When the system becomes over-heated, the amount of perspiration is increased, and *evaporation* ensues. Evaporation *produces cold*, and thus the body is kept at its normal temperature amid the extremes of heat and cold.

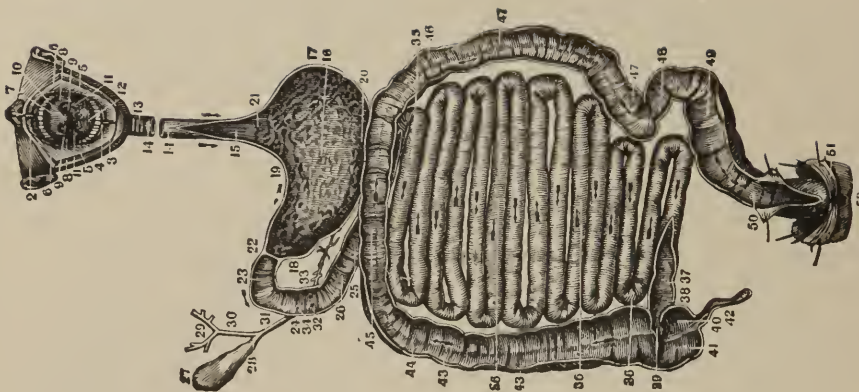
If the body from any cause is cooled down even a few degrees below 100 Fahrenheit, *death* is the sure result.

ORGANS OF DIGESTION.

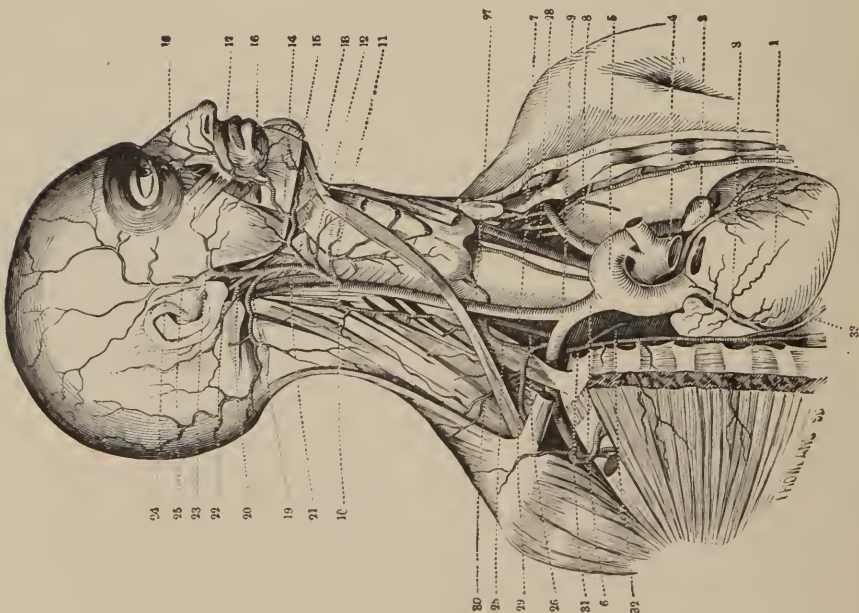
These occupy, for the most part, the great cavity of the abdomen, and are, principally, the Stomach, the Intestines, Liver, Spleen, and Pancreas, or Sweet Bread.

THE STOMACH.

The stomach is a large bag or pouch for receiving the food. It is situated a little below the diaphragm, and has two muscular tubes or pipes opening into it. One of these, leading from the back part of the mouth down through the chest into the stomach, opens into this organ at the left side. This tube is called the *œsophagus*. It runs between the air-tube and the spine, and conveys the food from the mouth into the stomach. The stomach is a highly irritable and sensitive organ, having numerous muscular fibres entering into its composition, and being plentifully supplied with nerves. On its outside it is covered by a membrane called *peritonæum*, because it lines the abdomen, and contains the different digestive organs within its fold. This



ORGANS OF DIGESTION. Page 138.



HEART AND LARGE ARTERIES AND VEINS. Page 122.

membrane not only sustains those organs in their proper situations but also affords a fine mucous fluid for keeping their surfaces constantly moist, thus



to prevent injuries which would otherwise arise from friction. From the internal surface of the stomach there is a fluid constantly secreting, called the gastric juice, which has the peculiar properties of dissolving and attenuating the food before it passes into the intestines.

EXPLANATION OF FIGURE IV.

- a* End of gullet.
- c* Large end of stomach.
- d* Cavity of the stomach.

- fg* Lower or pyloric end of stomach.
- k* Muscular band round pyloric end.
- ll* Folds of mucous membrane of stomach.

THE INTESTINES.

The intestines are a long membranous and muscular canal, which arises from the right orifice of the stomach, and is generally five or six times the length of the body, forming many circumvolutions in the cavity of the abdomen, which it traverses from right to left, and again from left to right. Their structure is not unlike that of the stomach, being composed partly of muscular and nervous fibres, and possessing a high degree of irritability, as may be seen by their worm-like motions, even out of the body after death, when pricked with a needle, or otherwise stimulated. Soon after the intestinal canal goes out from the stomach, an oblique opening may be perceived by which the fluids from the pancreas and liver are poured into the intestine for the purpose of mixing with the food as it passes downwards. That the descent of the aliment may not be too rapid, by which the body would be deprived of a supply of nutrition sufficient for life and health, the inner coat of the intestines is thrown into a number of plaits, admirably fitted to retard the progress of food, till its nourishing properties are absorbed by the proper vessels. The whole internal surface of the intestines is kept constantly moist by the discharge of a mucous fluid, which favors the proper descent of the alimentary pulp, and helps to secure these organs from injury. The intestines and stomach have a structure very similar to each other;

so that the description of one applies to the other with sufficient accuracy for our purposes.

They have three coats. The internal one has been described as secreting a defending mucus. Here open into the cavity of the intestines those small absorbing vessels which take up the nutritive particles; they are called lacteals. They arise from the upper intestines principally. Next to this is the muscular coat, the fibres of which run in two directions. The one set embraces the intestines as small circular bands, or nearly so; and their purpose is obviously to shorten, by their contractions, the diameter of the intestines. Other fibres take a longitudinal course and lessen its length. The combined action of these fibres produces the vermicular or worm-like motions, and propels the contents of the intestines downwards; as the parts are stimulated by the distention of the food. The last coat is the peritoneal, or investing one; it is a common covering to all the contents of the abdomen; which it at the same time lines. To cover the intestines it rises double from the spine, to which it is attached. It passes some distance before it reaches the intestines. These it embraces and slings in its fold, as an injured arm is slung from the shoulder. Between the spine and the intestines, it is seen like a thin and transparent membrane, allowing a sufficient motion to their different convolutions, without permitting them to become confused and entangled.

This is the mesentery, which is thus found to be a double membrane, including between its laminæ arteries and veins, nerves and lacteals, all ramifying with exquisite minuteness and delicacy.

THE LIVER.

This is the largest gland in the body, of a dusky red color, situated immediately under the vaulted cavity of the diaphragm, chiefly at the right side, but having the thin edge of its left lobe over the right side of the stomach. Anteriorly it is convex. Posteriorly it is concave. It is very thick in its superior part, and thin in its inferior. The upper side adheres to the diaphragm, and is fixed to this and to the breast-bone, by a broad suspending ligament. It is also tied to the navel by a ligament, formerly the vein by which the fœtus received nourishment from the mother.

The liver secretes a dark-colored fluid called bile. For this purpose it is supplied with a large quantity of blood. Most of the veins of the other viscera of the abdomen, instead of returning their blood to the heart, agreeably to the general laws of circulation, by the great returning veins, run forward towards the liver, where they unite in one large trunk, called vena porta, and which soon after

enters this gland, and is ramified throughout its substance. Here this great vein performs the office both of an artery and a vein; for like the latter it returns the blood from the extremities of arteries, while like the former (and by a singular exception) it accomplishes secretion. Besides this vena porta, which furnishes the materials for the secretion of bile, the liver has an artery of large size, for the purposes of nutrition to the organ itself; which, it would seem, could not be effected by the venous blood of the vena porta.

The bile, after being separated from the mass of blood in the liver, is conveyed by very minute excretory ducts into larger ones, which also convey it into one great duct or channel, and which, as we before observed, opens into the intestines not far from the stomach. There is attached to the lower part of the liver a little membranous bag, shaped like a pear, and which, as a small reservoir, contains a portion of the bile secreted in the liver. Its neck is continued in the form of a canal, running to unite with that of the liver, when both enter the intestine, and pour in their contents by a common opening. With respect to the precise use of the bile physiologists are not determined. It seems to perform some important part in the economy, and especially in the conversion of food into chyle, since that fluid is not separated until the pulpy contents of the stomach have been mixed with bile and the pancreatic juice. It certainly stimulates the intestines to act; for when the entrance of bile into the intestines is prevented by gall-stones or any other obstructing cause, the bowels are costive. We know, too, that many of our diseases, particularly those which we experience in hot climates, arise from derangements of this organ.

Between two and three pounds of bile are secreted every day.—It is somewhat remarkable that we have not as yet found out what is the precise function of the bile. We know that it is being secreted all the time, and not periodically like the gastric juice, but in the largest quantity during the process of digestion. It can always be detected in the intestines, before meals as well as immediately after.

It does not seem to aid digestion.—Its own elements are changed, transformed in the intestines, and are then absorbed and taken into the circulation. The secretion and flow of the bile are necessary to life. Experiments on animals have shown that if the flow of bile into the intestines ceases, weakness and death are the result.

The production of sugar.—Sugar is produced in the liver, is absorbed by the blood-vessels of that organ and mingles with the blood in the hepatic veins. This sugar is soon decomposed in the circulation. Carnivorous animals, that eat no starch, yet have sugar formed in the liver.

The liver is a very large and important organ, but it is hardly worthy of the importance that is sometimes given to it. It is charged with being the cause of most of the maladies of the human race. All this comes from our ignorance. We as yet know but very little about the liver. We know that it produces *bile* and produces *sugar*. The precise functions of this bile and sugar we do not know.

THE PANCREAS.

This is a gland, in structure similar to the salivary glands. It is placed behind the bottom of the stomach, towards the first vertebra of the loins, with one end pointing towards the spleen, and its other extremity extending forwards. It is about eight inches in length, two or three broad, and one in thickness; has a yellowish color, inclining to red, and secretes a fluid resembling the saliva, by a duct which enters the intestine, together with the biliary canal.

THE SPLEEN.

The spleen is situated immediately under the diaphragm, above the left kidney, and between the stomach and ribs. Its use is unknown. So unimportant, however, is its function in the animal economy, that Cheselden asserts it may be taken from dogs without any marked inconvenience. A case has been recently reported where the spleen was entirely removed, yet the patient lived and recovered.

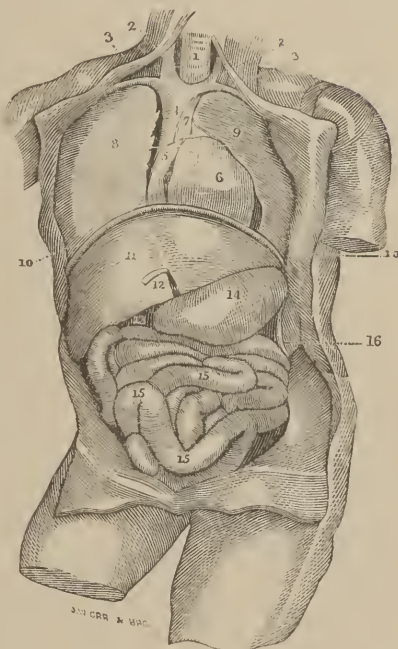
The spleen is an organ that has been very much slandered. By the ancients it was supposed to be the seat of *melancholy*; and even now the words "spleeny," "splenetic," are used to signify a person of a grouty or ugly disposition. But modern research has made it more than probable that the brain and nervous system, or sympathetic nerve, are at fault in hypochondria and melancholy.

We do not know that diseases of the spleen ever directly cause the "blues," although it is by no means impossible that they may do so. The truth in the matter probably is, that the same diseased condition that causes the spleen to be diseased, also causes the nervous system to be deranged.

THE OMENTUM OR CAUL.

There is a broad, thin, and transparent membrane arising from the inferior border of the stomach, and reaching down as far as the navel; it is every where double, consisting of two thin membranes, joined by cellular texture, in the cells of which great quantities of fat are sometimes deposited. The secretion of this fat is performed in the most simple manner. The fat is distributed very unequally in this membrane, it being in some places quite thin and transparent, and in other places above an inch thick. The caul of calves gives a beautiful representation of this fact.

The use of the caul is principally to interpose itself between the peritoneum, the intestines, and the stomach, to keep all these parts moist, warm, slippery, and to prevent their adhesion.



EXPLANATION OF FIGURE V.

REPRESENTING THE VISCERA OF THE CHEST AND ABDOMEN.

1. The Trachea or Windpipe, before it divides to plunge into the substance of the Lungs.

2. The Internal Jugular Vein returning the Blood from the inside of the head. It joins the

3. Subclavian Vein, conveying the Blood which has circulated through the Arm; both form a common trunk, the

4. Descending Cava, which pours its contents into the

5. Right Auricle of the Heart, which receives also the Blood from the rest of the body by a large Venous Trunk, the Ascending Cava, not to be seen in this view.

6. The Right Ventricle. The Left Ventricle cannot be seen, as it is situated behind the parts now in view.

7. The Aorta, or Great Artery of the Body.

8. The Right Lobe of the Lungs, part of which is cut off to show the great Blood-vessels; as is the Mediastinum, a Membranous Partition between the two Lobes of the Lungs, and dividing the Chest into two distinct cavities.

The Pericardium also is removed to show the Heart more distinctly.

9. The Left Lobe of the Lungs.

10. The Diaphragm, or great Muscle of Respiration, separating the Chest from the Abdomen, and upon which the Heart is seen to rest in its natural position. The Diaphragm is observed to be convex towards the Chest, and when we inspire this convexity is lessened, so that the Cavity of the Chest is lengthened; the Intestines are pushed down, and are protruded at the same time, because the Abdominal Muscles are then relaxed.

11. The Liver, which is suspended to the Diaphragm by a Ligament.

12. The Round Ligament, or what was the Umbilical Cord before birth; now rendered solid.

13. The Gall Bladder.

14. The Stomach pressed to the left side by the Liver.

15. The Small Intestines.

16. The Spleen.

DIGESTION.

The processes of Digestion.—Digestion is a complicated process

The first division of the alimentary canal is the mouth. Here takes place the process of *mastication*. By the action of the teeth the food becomes thoroughly chewed, triturated, and divided. By the saliva it becomes thoroughly moistened. This saliva is secreted in glands situated in front of the ear, under the jaw and the tongue. The saliva flows at all times, and keeps the mouth moist, but it flows in much larger quantities when the operation of chewing is going on. Were it not for this process of mastication solid food would not reach the stomach in a condition to be easily digested.

It is the opinion of Dr. Austin Flint, Jr., that the saliva converts some of the starch of the food into sugar.

About *three pounds* of saliva are secreted by every adult daily.

2. *Swallowing*.—The *œsophagus* is a tube extending from the throat to the stomach. The food is carried down through this tube involuntarily, by the action of the muscles. Sometimes, in “swallowing the wrong way,” the food gets behind the little valve that protects the opening of the wind-pipe, and then we cough and hack until the particle is expelled.

3. *Action of the Stomach*.—The stomach is composed of *muscles* and of a *lining membrane*. The membrane is filled with *tubules*, out of which *gastric juice* is poured as soon as the food enters the stomach.

Action of the muscles of the Stomach.—The muscles of the stomach are partly circular, partly longitudinal. The presence of food in the stomach not only excites the flow of the gastric juice, just as it excites the flow of saliva in the mouth, but also stimulates the muscular coat into action, just as it stimulates the muscles of the *œsophagus* into action and produces involuntary swallowing.

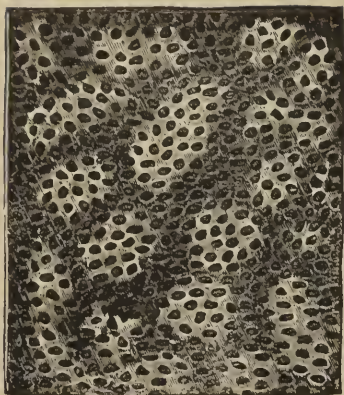
This action of the muscles of the stomach is to produce a kind of churning motion, and is called the *peristaltic* action. The effect of this action of the muscles is to aid the secretion of the gastric juice, and to cause it to thoroughly mix with the food.

The gastric juice is composed of water, pepsine, lactic acid, and some albuminous and mineral ingredients. The action of this juice on the food is to reduce the albuminous substances of the food to what is called *albuminose*. The *starchy* and *oily* portion of the food is unchanged in the stomach. As fast as the albuminous substances become transformed into *albuminose* they pass out of the stomach, in the form of *chyme*, into the small intestines.

This chyme consists:

1. Of the albuminose, mixed with gastric juice.
2. Of the starchy matters of the food.
3. Of the oily matters of the food.

Plate XXI.



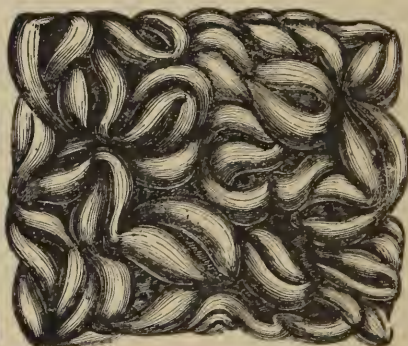
FOLLICLES OF THE STOMACH.



FOLLICLES OF THE COLON.



FOLLICLES OF THE ILEUM.



FOLLICLES OF THE JEJUNUM.



LYMPHATICS OF JEJUNUM AND MESENTERY.



PETER'S GLANDS.

MUCOUS MEMBRANE OF THE STOMACH AND INTESTINES.

The intestines secrete what is called *intestinal* juice. The action of this is to change the starch of the chyme into sugar.

PANCREAS AND PANCREATIC JUICE.

The pancreas, an organ situated behind and below the stomach, secretes *pancreatic juice*. This is poured into the intestine, acts upon the *oily* portion of the food, and changes it into an *emulsion* called *chyle*.

The food is carried down by the *peristaltic* action of the muscular coat of the intestines. This muscular coat is composed of circular and longitudinal layers, and their action is analogous to the peristaltic action of the œsophagus and of the stomach.

COMPLETION OF DIGESTION IN THE INTESTINES.

The process of digestion is completed in the intestines. As fast as the food becomes thoroughly digested, it is taken up by the absorbents and carried into the circulation. The substances which are not digestible are carried into the large intestine, and rejected from the system. When digestion is not well performed, constipation or diarrhœa may result. Therefore, in order to cure them, it is necessary to cure the indigestion of which they are the results.

The digestion is very much influenced by the condition of the mind. Many years ago, Dr. Beaumont had a patient with a permanent gunshot wound in his stomach, through which he could easily watch the processes of digestion.

He observed that bad news, or anything that made a disagreeable impression on the mind, arrested the secretion of the gastric juice, and consequently interfered with digestion. We all know by experience that mental distress or annoyance impairs the appetite and brings on attacks of indigestion. Dyspepsia is therefore very frequently the result of over-work and over-worry.

COURSE OF THE CHYLE TO BE MIXED WITH THE BLOOD.

The intestines, as we have observed, are generally five or six times the length of the body, and their internal surface is increased by the plaiting of its internal coat. From a large proportion of this great surface the new-formed chyle is constantly absorbed by the lacteals, which are minute transparent vessels, arising in infinite number from the inner surface of the intestines.

These vessels imbibe their chyle by absorption; for this nutritious fluid, being pressed against their mouths in the various motions of the intestine, acts as a stimulus, when these delicate and highly

sensitive organs contract, and propel the fluid forwards beyond the first set of valves, which prevent its return. It would seem, however, that those orifices of the lacteals act by some other power besides capillary attraction, inasmuch as they select the chyle from the rest of the chyme, and do not take up some fluids that have been introduced into the intestines for the purpose of experiment. Thus the lacteals perform absorption in the same manner as do the lymphatics; nor is there any difference in the construction or functions of these vessels. There is however a difference in the color of the fluids which they convey.

From the intestines the lacteal vessels convey the chyle along the membrane called mesentery, which extends from the intestine to the spine, to sustain the former in its proper place. Here they may be easily seen in an animal killed two or three hours after feeding, for then they are distended with the new, white chyle, which is going forwards into the circulation. Passing through this membrane, the lacteals run onwards to the thoracic duct. Into this duct the lacteals empty their contents. Soon after, mixing with the lymph, conveyed to this tube from the various parts of the body, both fluids are carried along the thoracic duct to its opening into the vein, and there are poured together into the circulation. Before it reaches the thoracic duct, the chyle enters one or more glands, where it undergoes some unknown change. These glands are attached to every part of the absorbent system; more especially to the lacteals. They are very numerous at the root of the mesentery.

The chyle now mixing with the blood becomes soon assimilated. From the vein where it enters, it is carried directly to the right side of the heart, whence it is propelled into the lungs, to imbibe the oxygen or vital portion of the atmospheric air, and to part with some of its carbon; returning to the heart again, now formed into perfect blood, it is forced by the left side of this organ along the arterial tubes, to distribute life and health to every part.

NUTRITIVE CHANGES WITHIN THE BODY.

These are of three kinds, *Assimilation*, *Secretion*, and *Excretion*.

Assimilation is the making of the food into tissues. The tissues of the body vary in their composition, and the *chyle* which is made from the food is different from the tissues. Each tissue takes from the blood just what of the inorganic substances it needs for its own nutrition.

Each tissue also takes from the blood just what *organic* substances it needs, and converts it into its own substance.

In this way, by this perpetually recurring miracle, the body is nourished. It is marvellous chemistry, and seems to be almost past our finding out.

Secretion is also a wonderful process. Secretions come from the blood, are prepared in certain organs, for certain purposes. The bile, the gastric juice, the tears, the saliva, the mucus of mucous membranes, the perspiration, the wax of the ear—all these are secretions.

Secretions are formed in glands. These glands are composed of follicles grouped together.

EXCRETION.

Every act, every thought, every feeling, is attended by a change of tissue. This change of tissue necessarily causes waste. The effete products of these changes are called excretions. Excretion is as healthy a process as *assimilation* or *secretion*. It is the elimination of the waste matters from the system.

The principal excretions are :

1. *Urea*.—This is found in the blood, and is excreted by the kidneys to the extent of about one ounce per day. The amount varies with the constitution of each individual and with the amount of work that is done.

2. *Carbonic Acid*.—This is exhaled by the lungs, together with some watery vapor.

The presence of carbonic acid and this watery vapor, together with the perspiration, makes the air of crowded assemblies so disagreeable and pernicious.

Besides urea and carbonic acid and watery vapor of the lungs and skin, there are the fæces, and there are also found in the urine urate of soda, creatine, creatinine, and various salts.

It is estimated that seven pounds of material are absorbed and discharged every day by a man of average size and in good health. In about 20 or 25 days a quantity equal to the whole body passes through the system.

THE KIDNEYS.

There are two glandular bodies, situated in the loins, contiguous to the two last short ribs, and lying close to the spine; the right under the liver, and the left under the spleen.

In each kidney three kinds of substance may be distinguished.

The outer part is glandular, beyond this is tubular, and the inner part is papillary or membranous.

The kidneys drain the system of its redundant water. For this purpose a considerable portion of the blood is constantly passing into each kidney by an arterial branch, which runs directly from the aorta or main artery of the body into this organ. Here, in the glandular part of the kidney, the blood undergoes a change, having its superfluous water, together with some saline bodies, separated, and is itself again returned to the circulation by means of a vein which goes to the great ascending vein of the body. The water being now strained from the blood is conveyed by an infinite number of small tubes, constituting the second substance of the kidney, out of its glandular part. These tubes, as they approach the inner substance of the kidney, gradually unite together; and thus forming larger canals terminate at length in ten or twelve little protuberances, called papillæ, the orifices of which may be seen with the eye. These papillæ open into a small reservoir, called the pelvis of the kidney, and formed by a distinct membranous bag which embraces the papillæ. The water being conveyed by the different tubes into the reservoirs of the kidneys is farther conducted by two large membranous canals, each about the size of a common writing-pen, and which go out from the hollow sides of the kidneys. These canals open into the back and under part of the bladder, whither they convey the redundant water of the system, and where, as in a great reservoir, it remains till a quantity is collected sufficient to induce a contraction of this organ, by which the contained fluid is necessarily expelled.

The bladder is a hollow, membranous, and muscular organ, situated at the bottom of the abdomen, immediately above the ossa pubis.

It is lined by a membrane which is defended by a mucus secreted from its inner surface. Next to this is its muscular coat, formed of fibres running in various directions, to contract it when filled, and to empty it completely. The outlet of the bladder is called its neck. Here the muscular structure is more obvious, and by the action of its fibres, which embrace the organ, the passage is closed until the bladder is so distended, that the muscles of its upper part by their contraction overcome those at the neck of the bladder, and expel the urine.

The canals conveying the urine from the kidneys, are called ureters. By a very simple but effectual mechanism, they convey their contents without a possibility of their being returned, merely by passing obliquely about half an inch between the muscular and inner coats; which oblique entrance answers the purpose of a valve.

Part of the bladder is covered by the lining membrane of the abdomen; which having descended to the lower and fore-part of that cavity, is reflected upwards over the top of the bladder. The neck of the bladder leads to the urethra or canal, which guides the urine altogether out of the body.

The kidneys and bladder are the seats of a most distressing disease, when calculi or stones are deposited from the urine, either by a constitutional tendency, or from the presence of a nucleus, on which the matter is incrustated. Any part of the urinary system may contain them. They are much more commonly found in the bladder. They may be removed by an operation, the most formidable, and the most painful one in surgery. It consists in making an artificial opening near the neck of the bladder, and extracting the irritating substance.

Happily, much talent and skill have combined to render this one of the most successful and beneficial operations practiced by the surgeon.

THE UTERUS AND ITS APPENDAGES.

The uterus, in form and bulk, resembles a middle-sized pear. The broader part is called its fundus, the narrower extremity is its neck, which is its lower part, and is closed by a chink leading to the vagina, or canal communicating with the outside of the body.

The uterus is placed immediately behind the bladder.

Besides its lower orifice there are two smaller ones leading from its fundus, on each side, to corresponding tubes, which are called the uterine tubes, and which terminate at a short distance in open mouths. The extremities of these tubes have several small finger-like projections, which are loose, and allow of their grasping any body to which they may become attached. These tubes are bent towards, (without, however, being attached to,) two small bodies of an egg-like form, placed on each side the uterus, called ovaries. These are firm.

and without any cavity, but they have several small vesicles imbedded in their substance.

The uterus, its ducts, and the ovaries, are connected together, and covered by an enveloping fold of the peritoneal membrane, which after having covered the top of the bladder, descends in order to reascend over the uterus, and to be continued over its whole surface and its appendages.

PREGNANCY.

When an intercourse takes place between the sexes, the whole uterine system experiences a peculiar excitement. The fibrous extremities of the uterine tubes grasp the ovaries, and squeeze out of them one of the small bodies we have described. This is the origin of the foetus, and is conveyed into the uterus along the channel, probably by a muscular power. Then the female constitution experiences striking changes. The monthly indisposition is stopped. The uterus gradually enlarges to a prodigious size, and a far greater quantity of blood circulates through its vessels. Its internal surface pours out lymph, which is the bond of union between it and the vesicle, previously detached from the ovaries; for blood-vessels shoot into it from the uterus, and enlarge its dimensions. It is now called the ovum. When it is large enough to enable us to distinguish its parts, we find it consists of membranes containing a fluid, in the midst of which floats the foetus; at first gelatinous and shapeless. Gradually its parts are developed, and we find that one extremity of the ovum is attached to the uterus by a thick and spongy mass. This is the placenta, the organ through which the future infant receives its nutrition in the womb. From the centre of the placenta a cord is continued to the navel of the foetus, along which run the trunks of the vessels of which the placenta is made up.

Usually, when nine months have elapsed, the muscular fibres of the uterus contract upon their contents, and labor commences. The lower orifice of the womb, (during pregnancy sealed by lymph,) now gradually opens. The cone-like form which the membranes of the ovum assume, acts as a wedge, when their fluid contents are pushed against the orifice, by the contraction of the uterus. While the opening dilates, the membranes burst, the fluid runs off and lubricates the passage.

The dimensions of the head are nearly proportioned to those of the outlet, and it can escape with facility only in one direction.

The structure of the head, being made up of many pieces, enables it to be moulded to the outlet. The bones overlap each other, and the size of the head is much lessened. When the head is released,

the great difficulty of labor is accomplished, and the infant is quickly born. The placenta and membranes usually follow the child in a few minutes. The uterus contracts, and is soon reduced to its former size.

THE FŒTUS, AND ITS CHANGES.

The entrance of the infant into the world is accompanied with great changes in its mode of existence, and with curious alterations in its internal structure to fit it for its new situation.

In one word, it is now a breathing animal instead of floating in a fluid.

Part of its organization is rendered superfluous, and gradually disappears; while other parts, which, in its original state, were inactive and useless, are now called into immediate use.

The more striking changes we have hinted at, are connected with the circulation of the blood, and the state of the lungs. These it will be interesting to point out.

The placenta, before mentioned, the organ by which the fœtus receives from the maternal blood what is necessary for its growth, is composed of blood-vessels, yet these, it is to be noted, do not communicate directly with those of the mother; and the mode of communication is still a mystery. The cord which connects the placenta to the navel of the fœtus, is called the umbilical cord. It has generally three blood-vessels twining around it, namely, two arteries, and one vein. If this cord is by accident torn asunder after birth, and the dividing end towards the fœtus is not bound up, the infant bleeds to death; but the mother does not lose blood, although the placenta should be still attached to the uterus, and that end of the cord untied. The vein conveys the blood from the mother to the fœtus, after it has gone through a process in the placenta, analogous to that which the lungs perform after birth; and, probably, it is by the same means supplied with new materials for the nutrition of the fœtus. The arteries bring the blood from the navel to the placenta, where they branch out very minutely, and are exposed to the influence of the maternal blood in cells contained in the substance of the placenta, from which the small ramifications of the umbilical vein arise.

The vein enters the fœtus at the navel, conveys its blood by a peculiar passage, termed the "venous canal," to the great vein, the vena cava, near to the heart. It enters the right auricle, and part of it passes by an oval hole into the left auricle. This opening (like the

before-mentioned canal,) is peculiar to the fœtal state. It is intended to avoid the circuitous course through the lungs; these being now dense, compact, and impermeable to so much blood; for they are not yet inflated by respiration. Still, however, part of the blood enters the right ventricle; too much it would seem to find a passage through the lungs. On this account there is another canal provided, (termed in contradistinction to the former, the arterial,) connecting the pulmonary artery with the aorta. Therefore when the right ventricle forces its blood into the pulmonary artery, which leads to the lungs, part of it passes directly into the aorta without entering these organs, while a very small portion circulates through them.

In one of these two ways, all the blood gets to the left side of the heart, to circulate through the fœtal system. It enters the aorta, and just below the branching of that vessel in the pelvis two arteries originate (the umbilical) which pass out at the navel to carry the blood to the placenta.

Having traced the circuit which the blood takes, we find this peculiarity; (which the fœtus has, in common with many animals, particularly the amphibious;) that it is not furnished with pure arterial blood in its arteries; for the umbilical vein mixes its pure blood with that of the vena cava before it gets to the left side of the heart, which dilutes it with venous blood.

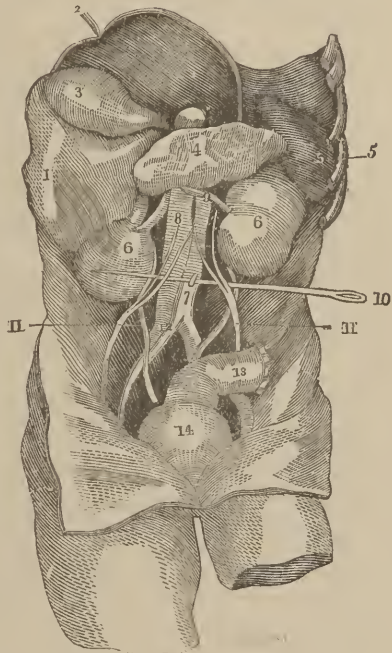
Yet it is partly arterial blood which is conveyed by the umbilical arteries to the placenta, for it has not all circulated through the system, and thus become venous. This state of the blood always exists in frogs. These animals have (strictly speaking) but one heart; viz: an auricle and a ventricle. An artery rises from the ventricle, and branches into two; one goes to the lungs, the other is distributed through the body of the animal. The pulmonary artery brings back its now altered blood from the lungs towards the auricle, where it is mixed with the venous blood returning from all parts of the system; so that here also, as in the human fœtus, the blood is never purely arterial, nor purely venous.

In man and quadrupeds *after* birth the blood is carried to the lungs, and is purely venous blood, and circulates through their bodies when wholly arterialized. The reason for this remarkable difference is not ascertained; excepting, indeed, that there seems to be a pretty uniform connection between imperfect arterialization of the blood and languid exertion of the powers of life, as well as the converse of the proposition.

The fœtus also may be considered as having one heart, while the infant, when born, may be said to have two; one belonging to the lungs, and one to the general system. The communication by the

oval hole in the fœtus, renders the heart in effect single, and its closure perfects the two circulations. In fact the right auricle and ventricle are of no use to the fœtal system; they are provided for the future wants of the child, and particularly for its breathing state; being wholly connected with the lungs, which are quiescent. When the connection with the placenta is cut off, the lungs come into play; breathing takes place, and the blood rushes through them. The venous and arterial canals, together with the oval hole, are superseded by new channels; the latter is closed up, and the former are gradually changed to solid ligaments, instead of being hollow tubes.

New supplies of food are now requisite, a bland, nutritious, and animalized fluid, is secreted in the mother's breasts; and nature, uniformly benevolent, has rendered the duties of a mother a source of exquisite gratification.



EXPLANATION OF FIGURE VI.

EXHIBITING THE DEEPER VISCERA OF THE ABDOMEN, BY THE REMOVAL OF THOSE FIRST IN VIEW.

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| 1. The under Surface of the Liver. | 9. The Vein which returns the blood from the Kidney. |
| 2. The round Ligament by which the Liver is raised. | 10. A Probe. |
| 3. The Gall Bladder. | 11. The Ureters, which carry the Urine from the Kidneys to the Bladder. |
| 4. The Pancreas, lying upon and across the Spine. | 12. The Great Artery and Vein dividing into smaller vessels to go to the Lower Limbs. |
| 5. The Spleen. | 13. The Lower Intestine, the Rectum. |
| 6. The Kidneys. | 14. The Bladder. |
| 7. The Descending Aorta. | |
| 8. The Ascending Cava. | |

INTEGUMENTS OF THE BODY,

AND THEIR APPENDAGES.

THE human body is protected and ornamented by a strong, pliable, and sensitive covering, which not only defends the parts underneath from external injuries, but also gives symmetry and beauty

to the figure. This covering consists of several parts, each having its peculiar use and structure.

We begin with that which lies immediately above the muscles, or flesh, and which presents itself to view on removing the skin.

THE CELLULAR MEMBRANE AND FAT.

Between the skin and the muscles, (or flesh,) and the fibres of each muscle, is interposed a loose, oily substance. It is continued without interruption over the whole exterior of the muscles, filling up their depressions, and affording a smooth and regular surface for the skin to lie upon. This substance is composed of a cellular texture and fat. The latter is fluid in the body, and is deposited in the cells of the former, for facilitating muscular motion. Though found in the greatest quantity in the cells of the membrane, filling up the space between the most external muscles and the skin, it may be met with in several other parts of the body.

The cellular membrane, which contains this fat, is not confined to any particular part, but is to be found at every point of the body. Its use and importance are very great. It serves as a bond of union, by tying and fastening all the parts together; (yet in such a manner as not to prevent or obstruct their necessary motions;) to contain fat, as under the skin and other places, or, marrow, or serum, or a thin vapor, to render parts smooth, moist, and flexible; and to hinder them from growing together. It yields a commodious way, or road, for vessels and nerves to glide along. It furnishes a considerable part of the linings of the great cavities of the body, and immediately covers and envelops each particular viscus of the body.

Fat is deposited very unequally throughout the body. Among the viscera it is sometimes in great abundance, particularly where a constant and equable motion is required. Hence the heart is imbedded in a cushion of fat, and well defended from agitation or interruption. The intestines slide over one another with great facility, owing to the masses of this substance which are interspersed among them. On the outward surface of the body, between the flesh and the skin, it is more uniformly diffused; although even here it is in some parts more abundant than in others; as on the soles of our feet, where it serves as a cushion on which the frame rests. It fills up the chinks and crevices of the muscles, and gives that gently undulating outline to our bodies, on which the beauty of the human form depends. The artist finds extreme difficulty in endeavoring to trace its flowing curves even when we are at rest, and still more to seize its flitting forms in the rapid succession of our motions, or in the greatest efforts of the muscular power. The fat undoubtedly

answers other purposes. It defends the parts of more delicate organization from external impressions that would injure or destroy them. It protects them from heat and from cold.

In health and middle age it is accumulated, perhaps, for the supply of the system, when other sources fail. Hence it is absorbed in disease, and taken into the circulation. In old age its quantity lessens, when the appetite and the other functions give way.

THE SKIN.

The skin covering the human body is found to consist of three separate parts or layers, which lie in close contact with each other, and adhere by means of numerous small vessels, and fibres which pass from one to the other.

The first layer is called the cutis, or true skin, to distinguish it from the scarf-skin, which is external to it. The cutis is spread immediately upon the adipose (fatty) membrane which we have described, and is always white whatever may be the complexion. This skin is exceedingly vascular, and is endowed with exquisite sensitiveness, being supplied with numerous nerves, whose papillæ stand out, and are the seat of feeling, as we have observed. It is extremely elastic, stretching, as in dropsy, many feet. After tapping, it returns nearly to its natural dimensions. It is thickest in those parts intended by nature to bear weight or pressure, as on the back, the soles of the feet, and the palms of the hands. It is thinner on the fore-part of the body, on the inside of the arms and legs, and where its surfaces touch opposite surfaces. On the lips it is extremely thin, so as to allow the color of the blood to shine through them. Under the inferior surface of this skin, are situated numerous small glands. They secrete an oily fluid, which they pour out upon the external surface of the skin, by means of excretory tubes, to keep it soft and flexible.

It is this skin in animals, which being prepared by tanning, constitutes what is called leather.

Immediately on the surface of the true skin, between it and the scarf-skin, is interposed a mucous substance, on which, as we have said, depends the color of the body. It is black in the Negro, of a copper-color in the Mulatto, brown in the Egyptian, white in the Albino, and in the inhabitants of cold climates. With us it becomes brown in those exposed to the beams of the sun, and particularly so when reflected from the surface of the water, as in a sea voyage, or from the white sands, as in Africa. The color of this mucus is transmitted from parents to their children, but is capable of great modifications. The offspring of a black man by repeated intermarriages

with white women, will in the fourth generation become perfectly white, and the converse of this is equally true.

Externally to this mucous membrane lies the cuticle or searf-skin. It is a fine transparent, but insensible membrane, every where investing the body, and is the part of the skin which is raised in the form of bladders, by the operation of a blister. The use of this last covering of the body is to protect the delicate nervous fibres, which stand out from the true skin, from the external air; and also to modify their too great sensibility, by interposing itself between them and the body in contact. The cuticle is perforated by innumerable pores for the passage of the perspirable matter, as will be shown in the next article.

PERSPIRATION.

An important office of the skin, on the due accomplishment of which health very much depends, is to exhale from the body a part of the watery fluid it contains. For this purpose it has innumerable excretory vessels opening upon its surface.

That this exhalation, though frequently insensible, is perpetually going on, appears evident from a variety of phenomena. Hold a polished, dry, clean, rubbed, piece of metal, close (without touching) to any bare part of the body, in warm weather, and it will be quickly sullied. Wipe it clean and dry, and hold it again to the part, and the same effect will be constantly renewed. Put your naked arm into a wide-mouthed chemical glass vessel, very dry, and you will soon see the internal surface of the glass dimmed with the exhalation from the limb; and if it be kept long enough within the glass, there will be seen streaks of moisture trickling down its sides.

From this experiment it is evident that the matter of perspiration has water for its basis, and that this water is constantly flying off in subtle vapor; or when the action of the perspirable vessels becomes increased either by exercise or heat, the perspiration becomes more sensible, and is seen to exude from the skin in large quantities.

The uses of perspiration are to free the blood from its redundant water; to expel from the body those particles, which by repeated circulation, have become acrimonious; and to cool, and regulate the heat of the system, by keeping up a constant evaporation.

Besides these exhaling vessels, the skin, (as we before observed,) is full of the mouths of lymphatic vessels. They constantly inhale their vapors from the surrounding air, when it is not very cold; but more especially when the air is damp, the body unexercised, and the mind oppressed with grief. This absorption of the skin is proved by the operation of medicine pervading the air, or applied to the skin;

such as the vapors of mercury, turpentine, &c., by the fatal effects of contagious or other poisons entering through the skin, and by other facts.

The quantity of this inhaled matter in animals it is difficult to ascertain, because it is not known how far the lungs are concerned in this process of inhalation and exhalation.

It is a matter of greater certainty that the skin acts upon the air, as the lungs do, in depriving it of its oxygen, and in loading it with fixed air; so that it would seem to co-operate with them in changing venous into arterial blood.

THE NAILS.

Their origin is a subject of dispute; yet they seem to possess many properties in common with the scarf-skin; like it they are neither vascular nor sensible, and when the scarf-skin is separated from the true skin by any means, the nails come away with it. They appear to be composed of different layers, of unequal size, applied one over the other. Each layer seems to be composed of longitudinal fibres.

In each nail we distinguish three parts, viz.: the root, the body or middle, and the extremity. The root is a soft, thin, and white substance, terminating in the form of a crescent; the scarf-skin adheres very strongly to this part; the body of the nail is broader, redder, and thicker, and the extremity is of still greater firmness. The nails increase from their roots, and not from their upper extremity. Their principal use is to cover and defend the ends of the fingers and toes from external injury; they also strengthen those parts; and prevent their bending backwards when applied with force against any hard resisting body.

THE HAIR.

It arises from distinct capsules or bulbs seated in the cellular membrane under the skin. Some of these bulbs inclose several hairs, but more generally each hair has its own particular bulb. The hairs, like the nails, grow only from below by a regular propulsion from the root, where they receive their nourishment. Their bulbs, when viewed with a microscope, are found to be of various shapes. In the head they are roundish, and in the eye-brows oval. Each bulb seems to consist of two membranes, between which there is a certain quantity of moisture.* Within the bulb the hair separates into three or four fibrillæ (small fibres.) The bodies of the hairs, which are the parts without the skin, vary in softness and color according to the

* For illustrations and further explanations see *Diseases of Hair*.

difference of climate, age, or temperament of body. They afford a light and ornamental covering to the head; serve as a defence to the delicate organs of vision, as in the case of the eyelids and brows; and also greatly adorn the figure by the richness of their color, and by the beautiful tresses which they form.

MAN AS COMPARED WITH OTHER ANIMALS.

It is important that we should compare man with the animal creation, for several reasons.

1. Such a comparison reveals to us the fact that there is far less physical difference between man and the higher order of the animals than is commonly supposed.

Man resembles the apes in the processes of his conception and birth, in his mode of growth, in his manner of taking food before birth and after birth.

Man is formed from an egg. This egg develops into an embryo. The embryo becomes a child. The child grows into a man. The adult man declines into old age, and finally dies.

The common house dog also begins life as an egg. It passes through the same complicated and wonderful processes as the human egg, and becomes instead of a child, a puppy. The puppy is born, and grows to be a full-sized dog. The dog declines to old age, and finally dies.

The chicken, as everybody knows, begins its existence as an egg. It passes through the same processes as the egg of the dog; in turn a chicken grows into a hen; in its turn produces other chicks, and ultimately dies of old age.

The same is true with all the other animals that have backbones—frogs, snakes, lizards, fishes, dogs, cats, and monkeys.

2. *There are less intellectual differences between man and the higher orders of animals than is commonly supposed.*

The intellect of man, as all know, is the function of the *brain*, just as digestion is a function of the organs of digestion, or respiration of the lungs. (See *Brain*.)

The intellectual power of any man depends on the quantity and quality of his brain, just as his digestive power depends on the size and health of his stomach, or just as his breathing power depends on the volume and condition of his lungs.

The same law applies to animals. Animals have more or less brain. The first rudiments of the hemispheres in the brain appear in the fishes. There appears to be quite a regular gradation both in the quantity and the quality of the brain as we ascend the scale

of the animal creation. The higher order of animals—dogs, horses, monkeys, and gorillas—have considerable amount of brain, although in quantity far inferior to that of man, and in quality probably still more so. The whale and the elephant are the only animals that have larger brains than man, but their superiority is far more than counterbalanced by their inferiority in quality.

Animals of the higher orders at least have the five powers of sensation, perception, memory, will, and judgment. Their great deficiency is in reasoning; their judgments seem to be mostly instinctive, yet they do not seem to be wholly destitute of reason.

The highest order of animals—the apes, gorillas, and chimpanzees—have a far less quantity of brain than man, and more especially in those portions that are supposed to be devoted to reasoning and comparison, and to the higher intellectual and moral faculties. The difference seems to be one chiefly of degree rather than of kind. The weight of the brain of man is about 50 ounces, and of the gorilla about 15 or 20 ounces. Idiots sometimes have very small brains—as low sometimes as 30 or 35 ounces—rarely lower than 30 ounces.

There is therefore a wide gulf in quantity between the highest type of monkey and the average order of intelligent man. There is probably a still wider gulf in the element of quality, though of that we are not as yet so well informed.

Man's superiority to the brute is seen, then, chiefly in the quality of brain. It is of a finer structure. It is richer in gray matter. It has more numerous folds. Its intimate structure is more complex. The microscope tells us that the human brain is composed of *eight* distinct layers, like the layers of an onion. These layers are composed of cells of every variety of shape, and connected by every variety of communication. The human brain is also rich in phosphorus. Examinations have shown that the brains of animals vary in their quality as well as in quantity with their intelligence.

Man is also superior to the animals in his method of speech. It is unfair, however, to deny the faculty of speech to animals. They have among themselves a language that expresses clear and definite ideas. The neighing of the horse, the lowing of the cow, the barking of the dog, the mewing of the cat, the singing of the bird, all are so many different kinds of speech.

So far as can be seen, then, the great structural difference between man and other animals is in *degree*, and chiefly, though not solely, in the quantity and quality of brain.

It is very true that man differs from the other animals immediately below him in the curves of his spine, the shape of his pelvis,



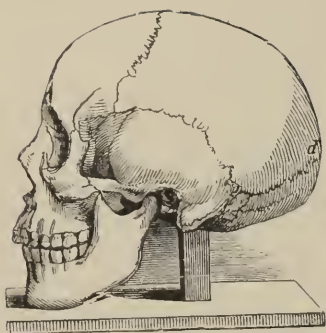
SKELETONS OF THE

GIBBON.	ORANG.	CHIMPANZEE.	GORILLA.	MAN.
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(From Huxley's "Man's Place in Nature.")

DRAWN BY MR. WATERHOUSE HAWKINS, FROM SPECIMENS IN THE MUSEUM OF THE ROYAL COLLEGE OF SURGEONS.

Plate 7.



Caucasian.



Egyptian Mummy.



Sioux Indian.



Greek Skull.



Gorilla Skull.



African Negro.

DEVELOPMENT OF THE BRAIN COMPARED.

the arch of his foot, the relative length of his upper and lower limbs, etc.; but all these are small matters. That which raises *man above the chimpanzee, the lemur, and the gorilla, is the quantity and the quality of his brain.*

Reduce the volume of the human brain one half, and the human race would be brought to the level of monkeys.

The accompanying cut, taken from Professor Huxley's work on "*Man's Place in Nature*," is exceedingly suggestive. It represents, side by side, man and the higher orders of apes.

There is probably as much difference between the quality of the brains of men and of animals, as there is between fine silk and linsey woolsey, or between a handkerchief of fine linen and one of coarse cotton. Chemistry and the microscope may yet settle this question beyond dispute.

Professor Schroeder van der Kolk has shown that there is a difference in the quality of the brains of different orders of the animal creation.

In order to find out the intelligence of animals, it has been thought to be necessary to take the weight of the brain as compared with the weight of their bodies. It is probable, however, that if we would, in all cases, accurately determine the exact quality of the brain by chemistry and the microscope, there would always be found a correspondence between that quality and the intelligence. On this subject I quote from a very able article recently published on this subject in the *North American Review* :—

"There is no action of the human mind which is not an act either of knowledge, feeling, or will. There is but a single faculty of willing, while our acts of knowledge and feeling are the product of several special and distinct faculties. In many of our complex mental operations, and even in some of those which appear to be the simplest, all the faculties of knowledge, the power of the will, and some one or more of the feelings, are brought into action. In the following instance of brute intelligence we shall find, upon careful consideration, that the case is precisely the same. The story will be given substantially in the words of the journal from which it is taken.

"In the Garden of Plants, in London, the keepers were recently engaged in destroying a great number of rats, when one of them escaped and ran to the spot allotted to the elephant. Seeing no other refuge, in the twinkling of an eye the rat snugly ensconced himself in the trunk of the elephant, very much to the elephant's dissatisfaction. He stamped his foot and twisted his trunk around like the sail of a windmill, and then stood suddenly still, apparently reflecting on what it was best to do. Presently he ran to the

water-trough where he was accustomed to drink, plunged in his trunk and filled it, and then raising it dashed out the rat in a torrent like that which issues from the hose of a fire-engine. When the rat struck the ground, the elephant seized him and made him undergo the immersion and projection four times. The fourth time the rat fell dead. The elephant, with a quiet but majestic air, crushed it under his foot, and then went round to the spectators to make his usual collection of dainties.

"In considering the mental operations involved in, and indicated by, the actions of the elephant in this contest, we will begin with the knowing or cognitive faculties. In the first place, he could not have become aware of the presence of the rat in his proboscis, except through an act of perception,—that faculty which gives to the mind its knowledge of external things. But perception involves self-consciousness: for the mind cannot become aware of the existence of something besides itself, without perceiving a difference between that something and itself; and the perception of differences presupposes a knowledge of the things which differ. Thus the elephant must have been conscious of his own existence at the same time that he was conscious of the present relation of some external object to his senses. He must have had, for aught we can see, as clear an idea of the *me* and the *not-me* as belong to most men. This is not asserting that the elephant is a philosopher, but only that he possesses the essential groundwork of intelligence.

"But the mental operation already described involves the exercise of other faculties than those of perception and self-consciousness. In distinguishing itself, the percipient subject, from the perceived object, the mind compares the two, and affirms that they are not the same. We have here comparison and judgment, the prime elements of all reasoning. However complicated any train of thought, it is capable of being resolved into a succession of simple acts of comparison and judgment. It is this fact which leads so many to deny to brutes the possession of these two allied faculties. The course of reasoning adopted is something like the following. One of the faculties of the human mind is the faculty of relations, or the power of comparing and judging. To the exercise of this power are to be ascribed all the grandest achievements of the human intellect, such as the discovery of the law of gravitation, and the evolution of the fundamental principles of ethical and metaphysical science. No animal has ever accomplished such results, and therefore the brute creation does not possess this faculty."

"Sorrow for the loss of friends many animals manifest in a striking degree. Examples of this emotion in domestic animals

will readily occur to every one. Forbes, in his 'Oriental Memoirs,' tells us that a friend of his having shot a female monkey and carried off the body, forty of the animals soon surrounded his tent, and, making a great noise, gave evidence of an inclination to attack him. On the presentation of his gun, all retired except one, who appeared to be the leader: he stood his ground, chattering furiously. As the man did not fire, the monkey at last came to the door of the tent and began a lamentable moaning, and by the most expressive gestures seemed to beg for the dead body. When it was given him, he took it sorrowfully in his arms and bore it away to his companions.

"Whether brutes sympathize with the happiness and sorrow of others might at first sight seem doubtful; but facts like the following compel us to decide the question in the affirmative. The story is taken by Brougham from an apparently trustworthy French authority. 'A swallow had slipped its foot into the noose of a cord attached to a spout in the Collège des Quatre Nations at Paris, and by endeavoring to escape had drawn the knot tight. Its strength being exhausted in vain attempts to fly, it uttered piteous cries, which assembled a vast flock of other swallows. . . . They seemed to crowd and consult together for a little while, and then one of them darted at the string and struck at it with his beak as he flew past; and others following in quick succession did the same, striking at the same part, till, after continuing this combined operation for half an hour, they succeeded in severing the cord and freeing their companion. They all continued flocking and hovering till night; only, instead of the tumult and agitation in which they had been at their first assembling, they were chattering as if without any anxiety at all, but conscious of having succeeded.'

"The emotion of satisfaction at success, and the opposite emotion of dejection at failure, as well as that self-satisfied feeling which we call pride or self-esteem, are often exhibited in the actions of domestic animals: it is not necessary to specify instances.

"Although we should hesitate to affirm that there are many animals which have a sense of the ludicrous, yet it can hardly be denied to the ape and monkey tribes, or to parrots.

"Surprise, curiosity, and the enjoyment of the new, all of which may be considered modifications of one and the same feeling, are noticeable in all the higher animals. Dogs meeting for the first time especially exhibit this emotion.

"That birds apparently delight in the brilliant plumage of their mates is an indication that they are capable of enjoying beauty. The fact that brutes do not seem to manifest any appreciation of

the sublime cannot be considered as due to any radical defect in their natures, so long as the philosophers make no fundamental distinction between the sublime and the beautiful."

Prof. J. W. Draper, in his *Treatise on Physiology*, describes the genius of animals in the following eloquent passage, which I transcribe in full :

"Insects form societies for mutual assistance, defence, invasion, emigration, mere pleasure—societies which undoubtedly arise in the experience of passions, such as love and fear. Of these the duration is variable; some last through the larva state only, some are confined to the imago, some are maintained through life. The organization by which their object is accomplished is various, monarchical, republican. The caterpillars of the processionary moths are guided in their march by a leader; the termites obey at once a king and a queen. The lust of power is not alone felt among human monarchs; the queen bee never rests till she has assassinated her rival. All insects of the same kind are not born equal, nor do all pursue the same occupation; some follow a life of leisure, some devote themselves to the profession of arms, some are laborers. When the metropolis of the termites is attacked, the laborers, as non-combatants, retire, but the soldiers come out. The ants, with which we are more familiar, engage in military and filibustering expeditions; they make reconnoissances, set sentinels, march in a definite order, the van alternately falling to the rear; their lines of communication are maintained, and, if necessary, swift couriers are dispatched for re-enforcements. If successful, they not only carry off their enemies' stores, but reduce the vanquished to actual servitude, compelling them to work as slaves. They have notions of property, and though some of them practice cannibalism, they will amuse themselves in more pleasant occupations, tumbling and playing together like kittens or puppies. With a sentiment of strict justice, the wasp who has returned from a successful foray divides his booty among the males, females, and the laborers who have been working in the vespiary; nor is the sentinel, who is doing duty at the door, forgotten. If, through the chances of war or by accident, any one has sustained a grave injury, in some tribes the most devoted sympathy is shown; the ant will carry his wounded friend out of the heat of the fight; in other tribes a more than Roman firmness is displayed: the sufferer is put out of pain by his companion. Expecting an attack, some insects will shut their doors at night, and barricade them within, or, if the danger is continual, will build masked gateways in succession, with interior walls that command them. They are no contemptible engineers. They can

construct and maintain roads of great length, with paths branching from them, which, if necessary, they keep mown; they cross streams by throwing themselves into floating bridges, and the damage done to their premises by an invader they show the most singular skill and alacrity in repairing. How many are the contrivances to which insects resort to carry out their purposes! The caterpillar of the cabbage butterfly makes a ladder and goes up it; the geometrical caterpillar lets down a rope, and, for fear of hurting himself, drops a foot at a time. The gossamer spider sends forth a thread fine enough to rise like a balloon, and, floating in the air, descends or rises by winding it up or letting it out. There are other insects which make diving-bells, and go under the water. No bird makes a net, no beast a pitfall; men and insects do both. A gang of sailors will carry a spar by supporting it on alternate sides on their shoulders; a gang of ants will, in like manner, carry a straw or a long worm. There are spiders which show as much dexterity as an Indian in sneaking forward to get in reach of their prey.

"In their domestic economy, how wonderful! Some build their houses of artificial stone, some of pasteboard, which they make. Some cover their rooms with tapestry, some lay carpets of silk on the floor, some hang their doors on silk hinges, so that they shut by their own weight. They make arches, domes, colonnades, staircases. They practice concealment of food."

Dr. Laycock (quoted by Prof. Draper) remarks thus boldly:

"On what structures depend, if not on these cephalic ganglia, all those wonderful instincts which mimic in their operation the arts of man. There is hardly a mechanical pursuit in which insects do not excel. They are excellent weavers, house-builders, architects; they make diving-bells, bore galleries, raise vaults, construct bridges; they line their houses with tapestry, clean them, ventilate them, and close them with admirably-fitted swing doors. They build and store warehouses, construct traps in the greatest variety, hunt skilfully, rob and plunder. They poison, sabre, and stab their enemies. They have social laws, a common language, divisions of labor, and gradations of rank. They maintain armies, go to war, send out scouts, appoint sentinels, carry off prisoners, keep slaves, and tend domestic animals. In short, they are mentally a miniature copy of man."

It is proper here to speak of the "*Darwinian Theory*."

Darwin has written a work on the "*Origin of Species*," in which he brings a large number of facts which go to show that all men and all animals, all organic life, have developed from one simple form, into which life was first breathed. He holds that men are

related to monkeys, that monkeys were formerly of a lower order of animals, that cats, dogs, horses, mules, oxen, sheep, &c., all have reached their present condition in the animal world by slow development—from animals below them. He holds that this development takes place through “selection,” or “survival of the fittest;” that the best selects the best in each order of life, and thus the children improve on their parents, while the inferior specimens of each race or tribe die out.

In the great struggle for existence which men and plants and animals have to encounter, the best always wins. In this way animals have improved and developed into the measure and the stature of men.

This theory of Darwin is rendered plausible by a large array of startling and suggestive facts. We know by experience that we can, by selection and care, improve or change breeds of animals and birds, such as horses, dogs, and pigeons. We know that we can do the same with plants and flowers. We know that we can do the same with man.

The question now arises—are the facts sufficient to prove the theory? Concerning this many of us must doubt. We know so little of the antiquity of man, so little of the early history of different races, so little, indeed, of human history, so little of the history of the animal world, that it seems to be impossible either to prove or disprove this brilliant generalization.

The investigations of Darwin have at least brought out some very valuable and interesting facts.

Thus we are told that the organic life on the island bears a close resemblance to the organic life on the mainland near it. The luscious peach of our gardens has descended, by the process of selection and development, from the bitter almond of Persia. Our cabbages even grew wild—a dismal weed—on the shores of Europe. The race-horse of England, under the culture and training of modern times, has become a different animal from its ancestors, both in shape and in quality.

Since the publication of the first edition of this work the doctrine of Evolution has made great progress. Mr. Darwin has published his “Descent of Man,” and Haeckel, a German professor, has pushed the theory to the extreme in his “History of Creation.” Nearly all the younger naturalists have become converts to the theory. The whole subject of Evolution is well set forth in the writings of Herbert Spencer and Prof. Huxley. Evolution is opposed by some of the older naturalists, and by some though not all theologians. Its general principles are doubtless true.

Plate 14.



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|------------------------|-------------------------------|
| 3. Cranial Bones. | 15. Spinal Cord. |
| 5. Cerebrum. | 16. Frontal Sinus. |
| 6. Cerebellum. | 21. Mouth of Eustachian Tube. |
| 7. Arbor Vitæ. | 24. Tongue. |
| 8. Corpus Callosum. | 26. Hard Palate. |
| 10. Mammillary Bodies. | 29. Epiglottis. |
| 11. Pituitary Glands. | 30. Cartilages of the Larynx. |
| 12. Optic Thalamus. | 31. Windpipe. |
| 13. Pons Varolii. | 33. Esophagus. |
| 14. Medulla Oblongata. | |

VERTICAL SECTION OF THE HUMAN BRAIN.

(After Meinhold & Sons, Dresden.)

HYGIENE,

OR THE

ART OF PRESERVING HEALTH AND PRO- LONGING LIFE.

POPULAR FALLACIES CONCERNING DIET.

THERE are more fallacies abroad among the people in regard to diet than on almost any other subject of hygiene. These are not confined to the ignorant and uneducated. They are accepted among the most learned and by those in the highest literary and social positions. These errors are due partly to the fact that the subject of food is a very difficult one, and cannot be entirely understood without some study and care.

Most of these errors, however, are the result of the false teachings of writers on health. Alcott, Graham, President Hitchcock—all sincere, honest men, but thoroughly at fault on nearly all their ideas of hygiene—exercised a powerful influence in their day, and the evil effects of their teachings still remain, and work terrible mischief.

I will briefly point out some of the errors that have been taught by these and others, and which are still abroad among the people.

In the *first* place, it is a fallacy to suppose that *people, as a rule, eat too much, and that most of the diseases of the world come from over-feeding.*

The truth is that, among all decent or civilized people, the tendency is directly the reverse. In our country, and especially in our large cities, far more are underfed than overfed. In civilized, hard-working communities, excessive alimentation is the exception, and not the rule. Throughout our land, thousands and thousands die every year from actual starvation. Some of these unfortunates are little children whose parents are too ignorant, or too poor, to give

them what is necessary to sustain life. But many of them are adults, whom hard poverty, or sad ignorance, has forced into a habit of systematic though undesigned starvation. Day after day their stomach receives less nutriment than the system demands. Day after day the vital powers slowly fade, the strength grows less, the spirits become morbid, and the face wan and dejected. Disease now steps in, attacks and carries by force some important citadel of the body, and death follows. The process is a slow one—sometimes very slow—extending, perhaps, over many years, but it is oftentimes just as sure as it is slow.

As a rule, the savages eat less than the civilized. They may gorge themselves at long intervals, like the Bushmen and Hottentots of South Africa, and the Greenlanders, and Esquimaux; but between these seasons of hideous gluttony many days often intervene. The average quantity of nutriment that most of the barbarous tribes consume is unquestionably less than that of the civilized, who take three regular meals daily. Indeed, most of the wild races lead a very precarious existence in regard to food. They subsist on snails, bugs, clay, insipid or bitter fruit, unsightly worms, and other substances equally abominable, which are neither nutritious nor agreeable.

I say, then, that the civilized eat more than the savage, and that they ought to do so. The reason is clear. They work harder. They use their brains more. Labor of the brain is always accompanied by waste of tissue. It has been estimated, by Professor Houghton, that three hours of brain-work cause as important changes of tissue as a whole day devoted to mere muscular labor.

There are drones, all through society, who do nothing but live on others. There are gluttons and gourmands, all through society, who do nothing but eat and drink. But gluttons and gourmands are exceptions in civilized lands. Many children undoubtedly eat too much and too often; but they almost always break off the habit before reaching adult age.

Even among our rich and luxurious classes, the number of those who injure themselves by over-eating is far less than the number of those who injure themselves by under-eating. Rich and fashionable people use their brains very actively—oftentimes, it must be allowed, in acts of frivolity and dissipation—are usually hard-working men of business, and need more and a greater variety of food than those who do little or nothing, or who live by muscular toil alone.

In the *second* place, *it is a fallacy to suppose that vegetable food is healthier and easier of digestion than animal.*

Comparative anatomy, physiology, experience, our natural ap-

petites, and the history of the world, all show us that man should have a mixed diet—flesh, fish, fruit, and vegetables.

The contrary doctrine is one of the most monstrous errors that ever infested society. It has carried hundreds and thousands to early graves. The popularity of this error, at one time, was partly the result of the popularity of the men who advocated it.

In this country, we love extremes, and roll them as sweet morsels under our tongues. Vegetarianism is an extreme, and therefore Americans cherished it. At the present time it is not practically advocated by any large or influential number; but there are very many who theoretically believe in the heresy, and who think that they do wrong when they eat flesh or fish. Thus they go on all their lives violating their consciences. "Woe unto the man who creates a sin!"

The truth is, that vegetables, potatoes, turnips, carrots, etc., are not only less digestible than fresh beef and mutton, but they are also less nutritious. They linger longer on the stomach, and, being composed mostly of water, give less nutriment to the system. Therefore, many, who cannot digest vegetables at all, can eat and relish and assimilate beefsteak, mutton, lamb, chicken, turkey, etc., without difficulty. Chronic invalids and dyspeptics should, as a rule, eat largely of fresh meat and fish, and very moderately of vegetables.

It is true, however, that vegetables, bread, and fruit, are all necessary, and all should be used under the guidance of experience, and the taste of each individual.

But it must not be forgotten that more *acute* diseases—far more—arise from fruit and vegetables than from flesh and fish. Each individual must, therefore, find out for himself, by his own experience, what he can indulge in, and what he must forego.

Another fallacy, *in regard to diet, is to suppose that the natural appetite is not the best guide as to the quantity and quality of our food.*

It is true that the appetite does sometimes become perverted. It is true that it does become sometimes a symptom of disease. But these cases are exceptional.

Hideous doctrines have been taught on this subject. We have been solemnly told to rise from the table as hungry as when we sat down. We have been told to be always ready for a meal—in other words, to live in a state of perpetual hunger. We have been told to eat those things that we most hate, and to avoid those things that we most love—that to have a longing for any article is the very reason why we should be denied it.

These doctrines are monstrous. They are unworthy of the nineteenth century. They are a libel on the Creator who gave us taste and appetite, in order that we might know what to eat and drink, and gave us also judgment to direct appetite and taste when the system becomes diseased.

Notwithstanding all its liability to perversion, the appetite is, on the whole, a better guide in selecting food, and in measuring its quantity, than all the books on hygiene that have ever been written.

The practice of weighing the food, which was introduced to the world by the example and teachings of Cornaro, the Italian, cannot be too strongly reprobated. It is impossible for the *scales* to tell us how much to eat. The quantity of food that we need depends on the amount of labor that we do, on the nature of the constitution, on our mental moods, and on the quality and variety of the food which is served.

To weigh or measure the food habitually is not only silly, unnecessary, and useless; it is actually a crime. It wastes valuable hours that should be better employed. It makes us miserable, and that fact alone is argument enough against it. It brings on indigestion and all other woes, and therefore prevents us from getting the best advantage of what we eat.

Another common fallacy, in regard to diet, is the theory that one or two kinds of food, at each meal, are more easily digested, and more wholesome, than a large and palatable variety.

Our books on health tell us over and over again that *two articles* at each meal are sufficient, and that we shall be liable to eat more if the table is covered with a generous variety.

My advice is emphatic and clear. Let there be as generous, agreeable, and attractive a variety at each meal as we can afford. Let the limits of that variety be determined by our purses, our tastes, our appetites, and our talent in cooking, and not by the books.

It is possible for nearly every family to have a good variety of food at each meal, or, at least, at the principal meal of the day, without great expense. Cookery is one of the fine arts. It should be made a study. We have good books on cookery at the present time, and every young wife who loves her household, and every young maiden who hopes to have a household to love, should study the best works on this subject, just as they study grammar, arithmetic, and geography in the schools; and, above all, should practise the art *with their own hands* at home.

Genius never made any lady a good cook. The art is acquired by close study and patient practice, by many and repeated failures

A good cook can make a pleasant and healthful meal out of a few simple articles. A poor cook will make a wretched dinner, ever with the whole market at her disposal. I hope to see the day when the art of preparing food will be taught in our schools, like other important branches; when young girls and young wives will go to the cooking-school as they now go to the dancing-hall, and when even ladies of fashion will boast of their bread and their puddings as they now boast of their acquisitions in music and French.

A variety of food is more healthful than one or two kinds, because it is more easily digested. This is a law of Nature. Appetite teaches us to combine sweet with sour, vegetables with meat, dry food with watery, etc.

A meal composed simply of dry Graham bread, or of potatoes, or of fruit even, is far, far less palatable and less digestible than a meal composed of all three varieties at once. Science and experience are here in perfect accord.

If, therefore, we must eat candy, let it either be with or just after our meals. If we must eat sweets in the evening, let us have sour fruit—apples, or lemons, or oranges—at the same time, and we shall be less injured. We should never eat a large quantity, either of sweet or of sour substances, on a perfectly empty stomach.

Still another common fallacy is, that brain-workers need less nutriment than those who live by their muscles.

This idea would never have been entertained if people had depended on their own observation and experience. But we have been influenced by false teachings and erroneous theories.

Any one who has attended associations of clergymen, or alumni meetings, or has boarded with students, has had opportunity to see that brain-workers are large eaters, as indeed they should be if they are really hard workers. The *changes of tissue* in the brain, that take place *during study and thought*, are very important and very *rapid*, and *must be replaced* by abundant food.

The ruling classes in all powerful countries have been liberal feeders. Babylon was a powerful city in its day, and all accounts agree that its inhabitants were given to free and luxurious living. The same was true of Persia, and indeed of all the Oriental powers that successively held sway over that portion of the earth. The ancient Greeks were far from being Grahamites or vegetarians, but availed themselves of the best that their little peninsula could afford.

They were not, however, as extravagant and luxurious as are the civilized nations of the present day; but, on the other hand, they were not as aggressive and powerful in all that becomes a nation as were many other kingdoms of ancient times.

The most powerful nation of antiquity was Rome. It governed 120,000,000 of people, and displayed great skill and gigantic energy in works of internal improvements. Of the manner of life of the Romans we have more direct and authentic testimony than of any other nation of ancient times. No people of any era of the world were so devoted to the pleasures of the table. The countrymen of Cæsar and Pompey, of Livy and Cicero, of Virgil and Augustus, were as vigorous performers at the table as on the field of battle, in the discussions of the forum, or in the realm of poesy.

Not content with the products of their own soil, or the ordinary articles of diet, they ransacked the most distant lands and seas for the rarest specimens of flesh, and fowl, and fruit, and served them up in every combination then known to the culinary art. The descriptions that historians give us of the banquets of the Roman patricians, in the time of the greatest glory of their empire, seem more like mythical tales than realities; and if they were not thoroughly substantiated, would hardly be worthy of credence.

It is true that the systems of cookery of that time were much inferior to our own, and the best methods of preparing ordinary dishes were not as diffused among the masses as among our own population; but the patricians—the ruling order of Roman society—who made Rome what it was among the nations, left no known means untried to make their tables tempting and luxurious.

If now we come down 1,800 years, we find that the dominant classes of the great powers of the earth are, without exception, good feeders. The skilful cooking of the French, and the roast beef and plum-pudding of the English, have long been proverbial.

France and England are confessedly the two great powers of Europe. The better classes among the Germans and Russians are free and easy livers, though they are not, as a rule, as fastidious connoisseurs nor as voracious as the English. The Americans are, unquestionably, the greatest eaters of the civilized world. There may be Greenlanders who consume, at irregular periods, incredible quantities of train-oil and blubber; there may be certain classes in Europe who live perhaps more expensively; but there is no country anywhere, the mass of whose population live as generously as ours.

Our raw material is greater in variety and abundance than that of any other, and we have all the commercial products of other lands. Said Carlyle to Emerson: "The best thing he knew of that country [America] was, that in it a man can have meat for his labor."

So much has been said of the abstemiousness of Socrates, of Cincinnatus at his plough, and of the simplicity and frugality of many other philosophers of ancient and modern times, and so many

precepts inculcating temperance and moderation have been handed down from age to age, that few will be readily inclined to accept these statements concerning the liberal diet of those who live by their brains without specific examination. Elaborate statistics can not be obtained in regard to the personal habits of any considerable number of the brain-workers of history, but biography is sufficiently explicit to warrant the assertion that vegetarians or dietarians (as the term is popularly understood) have been the exceptions and not the rule among them. The common and almost universally received impression, that severe mental activity is inconsistent with free living, and that vegetarians can think harder and longer than flesh-eaters, seems to have derived its plausibility from the following observed facts, which, as we shall see, can be entirely explained on other principles.

First.—Intuition and experience teach us all that two so important organs as the stomach and the brain cannot both be overtasked at once, without injury to the one or the other. It is said that General Elliot, the defender of Gibraltar during that memorable siege, lived for several days on a very little boiled rice.

Sir Isaac Newton fasted for long intervals while he was engaged on his *Principia*. Most of the great generals of the world have been rigidly abstemious under the pressure of great emergencies. A number of authors could be mentioned, who, during the execution of great life-tasks, have, for the time, starved the body that the mind might, as it were, act independently of its earthly tabernacle. In this respect they but imitate the shrewd merchant, who, on entering upon some unusually great speculation, retrenches his expenses, and withdraws his funds from other directions, until the emergency is over, when perhaps he spends and invests again with still greater freedom than before.

Secondly.—The standard of living has been so much raised under our modern civilization, that the diet of the heroes of the past seems to be very meagre, though they may have been as liberal as the best of their day.

The laborer of our age and country often spreads a more delicate table than the Court of Queen Elizabeth. Not that the worthies of Queen Bess's reign were poorly fed; for their diet was nutritious, but not as agreeably served and varied as ours.

Thirdly.—There have been, and there are still living those among our prominent *littérateurs* who, for a season at least, have been so attracted by the novelty of vegetarianism, and by the views of Alcott and Graham, that they have practically adopted them, and with the usual ardor of first converts, they have loudly pro-

claimed their experience, and have exhorted others to march under the same banner.

Among them I may mention the names of the poet Shelley, Lewes, the biographer of Goethe, and Horace Greeley.

But it is observed most of these gradually lose their enthusiasm over the new doctrine, and finally abandon the system altogether. As has already been suggested, those who suddenly change to a vegetarian or very simple mode of diet at first find that they can study harder and perhaps longer than before, for the reason that they eat much less quantity than when they partake of a variety of food.

The stomach has so little to do that the brain is always in working order, and for a time the new convert, especially if he be of a poetic turn, lives in a kind of intellectual heaven.

But in the majority of cases, this ecstatic existence gradually yields to a feeling of depression and weakness, that can only be relieved by an abundant supply of food. If they have sublime faith in the truth of their theories, united to great strength of will, they may persevere in this misguided course until sickness or death close the scene. Such has been the fate of some very able and promising young students in our colleges and professional schools. But the majority, after testing the new doctrines for a few months or years, gradually abandon them, and return to the natural manner of life. The result is, that after all the discussions that have taken place on this subject, the number of consistent vegetarians is exceedingly small. The impression that those who depend on the labor of their brains need less food than mechanics and laborers, is so deeply fixed in the minds of the community, that it is probable that only the most direct and telling statistics will suffice to introduce a new belief.

OBJECTS OF DIGESTION.

The great object of digestion is the formation of chyle; hence, whatever substances yield this fluid in the largest quantity, and of the best quality, will necessarily afford the most nourishment. But the various substances used for food differ greatly in their nutritious and digestive qualities. Some are highly nutritious, and are, nevertheless, difficult of digestion; others, again, pass quickly out of the stomach without supplying much nourishment to the body. Food is introduced into the stomach with the object of being converted into a fluid fitted to become a constituent part of the living body. It might, therefore, naturally be presumed that substances, already of an animal nature, and similar to the structure which they are in

tended to supply, would be better adapted for this purpose than either herbaceous or farinaceous food; and this is the case, for animal food contains a greater quantity of nutriment in a given bulk than any kind of vegetable aliment. But it is not alone sufficient that substances used for food are capable of being assimilated; their consistence ought to be soft and loose enough to allow them to be easily acted upon by the digestive organs; because the more tender the aliment, and the easier it is divided, the more readily will it be dissolved by the gastric juice, and converted into chyle. On the other hand, hard and close-grained substances are proportionably slow and difficult of digestion. We also see that persons who eat quickly, without properly chewing their food, are often troubled with indigestion, and frequently void fragments of various alimentary substances, which have passed through the intestinal canal in a half digested state. Old people who have lost their teeth, being unable to chew their food sufficiently, suffer in the same manner. The digestibility of food, then, is owing, in a great measure, to the tenderness of its texture and minuteness of division by the teeth. It has been shown, by direct experiments on the living body, that the different kinds of animal food, whether of flesh, fish, fowl, or game, are more or less easily digested, according as their texture and tenderness of fibre render them easy of mastication and solution; these properties in butcher meat depend greatly on the time that has elapsed since the animal was killed, on its age, sex, food, mode of killing, and of cooking.

The kind of food which the animal consumes in its natural state, or on which it is fed artificially for the purpose of fitting it for the table, will considerably modify the character of its flesh. Animals which feed on corn are firmer in their flesh than those eating the herbs; and animals using mountain herbs are firmer and more savory than those feeding on the succulent and watery herbage of plains. Animals which feed on flesh are coarse and heating; and few of them can be used as food without proving injurious to the system. Castration renders all animals fatter, and causes the fat to be better mixed through the fibrous parts, while it improves the quality of the flesh, and makes it more tender. The flesh of the female is also much more delicate than that of the entire male; and it appears to be generally understood, that depriving females of the ovaries (*spaying*) improves the flavor of the flesh. The texture of the muscular fibre is likewise improved by violent exercise; bull-baiting, hunting, and the old German custom of whipping a pig to death, render the flesh more easy of digestion. A teaspoonful of vinegar given to a fowl some time before killing it renders the flesh

more tender when intended for immediate use. Wild animals, when young, are easier of digestion than the same species in the domestic state; and the parts principally exercised, as the wings of birds, and the legs of swift animals, are harder and of stronger texture than the rest of the body. The effect of decomposition or incipient putrefaction on fibrous animal food is to render the muscular fibre less hard, and consequently more easy of digestion. Game, after hanging a sufficient length of time, acquires another quality, which no doubt tends to render it more digestible. A pheasant, for example, if used too soon, is comparatively insipid, but if kept a proper length of time acquires a much finer flavor, and this, by gratifying the palate, increases the flow of saliva, while, by sympathy, the stomach is excited, the secretion of gastric juice is augmented, and digestion is consequently promoted. But tainted meat, though easier of digestion, is more heating; high flavored game would be too exciting for an invalid, and too strong for his stomach. Decayed cheese, like tainted game, is stimulating. A little of it, taken after a full meal, excites the stomach, and would be highly improper for an invalid. But of all the means by which the texture of our food is acted upon, and its digestibility modified, cookery is certainly the most important. A few remarks, therefore, upon the principles which render the ordinary culinary processes serviceable in the preparation of our food, may be useful.

DIFFERENT MODES OF PREPARING FOOD.

ROASTING. Flesh, when roasted, and neither too much nor too little done, contains nearly all the juicy parts, and more of the nutritious principles, than boiled meat. Roasting softens the tendinous parts better than boiling, while the crust retains the juice, and gives the gravy a brown color and an agreeable taste; but during the process it is computed that the meat loses about a third of its weight by the melting out of the fat and the evaporation of the water. By roasting, the fibre is not rendered so soft and pulpy as by boiling, and the meat is consequently not so easy of digestion; for the digestibility of food depends in a great measure upon the softness of its texture; but roasted meat is much more nutritive. One pound contains as much nourishment as two of boiled meat. The gelatinous and viscid meats, however, of the younger animals, veal and chicken for example, are more wholesome and easier of digestion when roasted; for, by boiling, the gelatin acquires properties which render it very oppressive to the digestive organs. Many people suppose that underdressed meat is easier of digestion, but this is a mistake, for when not sufficiently done, its texture is more dense.

BOILING. If boiled too long, or too fast, the albuminous part of meat becomes coagulated, and the flesh is rendered hard. The water should not be brought quite to the boiling point, but should be kept long at a temperature a little under it. By this plan of cooking the meat will be found more wholesome, and easier of digestion. Mutton in boiling generally loses about one-fifth, and beef about one-fourth of its original weight. The quality of the water is also of importance; beef or mutton boiled in hard water is more tender and juicy than when soft water is used. Water of this description, or with a considerable quantity of salt in solution, is also best suited for the boiling of fish. Vegetables, on the contrary, require soft or rain water, and care should be taken to have them boiled sufficiently. By neglecting this precaution their digestibility is greatly diminished, and they are rendered injurious. Vegetables, if not well boiled, pass through the alimentary canal without undergoing much alteration; and in some stomachs they ferment and run into acid, causing heart-burn and disorders of the bowels.

BROILING. If the portion of meat is not too thick, and its fibre cut across, the heat quickly penetrates and loosens the texture. From the suddenness of the operation the juices are retained, and it is thus rendered peculiarly tender. There is no kind of cooking more wholesome than this. A well-broiled rump-steak or mutton-chop is juicy and rich, and is by far the most nourishing and the best suited for the stomach. From the nutritive and digestible qualities of meat dressed in this way, broiling is considered the best mode of cooking, where it is thought proper to give animal food to restore the strength of invalids.

FRYING. This is the most unwholesome kind of cooking; it should be carefully shunned by invalids.

BAKING. By this operation (inferior to roasting) the meat is equally done and tender, but the retention of the oil or fat prevents the easy digestion of baked meat. Baking, however, may be safely employed in the preparation of light puddings for convalescents; but butter should not be used for the purpose of browning the surface of the pudding.

CLASSIFICATION OF FOOD.

The different articles of food have been variously classified.

In this work I shall not attempt to present any formal classification, but shall give merely the ordinary division, which can easily be remembered and understood.

1. *Albuminous substances.*—Under this class are included the *albumen of eggs*; *fibrin*, found in the blood; *casein*, found in milk;

gluten, found in wheat flour. Albuminous matters can *coagulate, ferment, and putrefy*.

2. *Oleaginous or fatty substances*.—These are found both in animal and in vegetable food.

3. *Starch and sugar*.

4. *Inorganic substances*.—Under this class are included water, lime, common salt, soda, potash, iron, and magnesia. *Our diet should be composed of all these substances*.

Thirteen different substances make up the human body. Our food must contain these substances—all of them—in order to supply the waste of tissue that is continually going on.

The average quantity of food required for adults is between *two and three* pounds of solids, and *three or four* pints of liquids. In regard to quantity every one must judge for himself by his own experience. The quantity depends on the *age*, the *sex*, the *constitution*, the *state of the health*, and above all on the amount of *muscular or brain work* that we do. *Appetite is the best guide*.

The *quality* of the food also depends on the *kind* of work that we do. Brain-workers need food that contains a large amount of nutriment, and does not tax too severely the digestive organs. Therefore let them eat fresh meats, fish, eggs, oysters, and bread, and abstain from pork and veal, and use vegetables sparingly.

FLESH FOOD.

Butcher's meat, and all the fleshy or muscular substances used as food, are chiefly composed of *fibrin*, which sustains the same relation to the muscular parts of the animals, that *fecula* (or starch) does to farinaceous substances. But fibrin is more quickly digested than *fecula*, and more nutritious. In general the nutritive qualities of the different kinds of animal food are proportioned to the quantity of fibrin which they contain.

The red meats, more especially those which are dark colored, are imbued with a principle called *osmazome*. This substance is contained in the fibrin, to which it gives a stimulating action, and tends greatly to aid in its assimilation; although of itself it does not appear to possess any nutritive quality. It is to *osmazome* that the stimulating effects of animal food are attributed; and to this also beef, mutton, and the colored flesh of all animals owe their grateful odor when dressed. It enters sparingly into the composition of young and white meats, which are consequently deficient in savor. *Osmazome* does not exist to so great an extent in red colored flesh as in that which is dark; and the color of the latter is ascribed to the increased quantity of this principle. These two classes, however,

cannot be distinctly separated; they gradually merge into each other.

In arranging the different kinds of animal food according to their nutritive qualities, the flesh of quadrupeds, generally speaking, takes the first rank; next that of birds; then fish; and lastly oysters and other shell-fish.

BEEF. Beef affords much nourishment, but being of a finer texture is not considered so easy of digestion as mutton, though equally nutritious. The flesh of a bullock about the middle age is much superior to that of one which has been worn out with labor, because in all old animals (besides the disadvantage of the greater density of the muscular fibre) the fat is chiefly connected in layers on the outside of the muscles; whereas in young animals it is mixed with the flesh, giving it that marbled appearance which is always expected in good butcher meat. Cow beef is considered inferior in every respect to ox beef.

Beef-tea is much employed for the sick, when the state of the patient admits of animal diet; and, taken with bread, is one of the best restoratives during convalescence, but should be used sparingly, on account of its stimulating properties. Dr. Kitchener, a good authority in such matters, has given the following receipt for making it:—"Cut a pound of lean gravy meat into thin slices, put it into a quart and half a pint of cold water, set it over a gentle fire, where it will become gradually warm; when the scum rises, let it continue simmering gently for about an hour, then strain through a fine sieve, or a napkin, let it stand ten minutes, and then pour off the clear tea." (See *Food for the Sick*.)

MUTTON. Mutton in good condition has the proper tendency of fibre to render it easy of digestion. It is not so savory nor so stimulating as beef, but is well known to be very nourishing. The flesh of the *wether* is by far the most digestible, and is considered best about five years old. Ewe mutton is generally preferred about two years old, but is not so savory or sweet.

PORK. Pork is highly nutritive, and is less stimulating than beef; but being the meat most mixed with fat, it remains long upon the stomach. Hence laborers prefer pork and bacon, because, with this food, they are able to remain longer at work without being hungry.

Pork is an article of food that should be eaten only by those who have strong constitutions, and work hard in the open air.

Pork, whether salt or fresh, is hard of digestion, remains for a long time in the stomach, and may be filled with worms—the *trichina spiralis*. (See *Trichina spiralis*.)

Buckle tells us, in his "History of Civilization," that for a number of centuries *pork* was the chief article of diet in Europe. Even at the present day and in our own land, favored as we are with every variety of flesh and fish, of cereals and fruit, yet pork constitutes the principal meat of thousands of families.

The food ought always to be adapted to the constitution and the age. Delicate ladies, the wives and daughters of our farmers, who live indoors, ought not to have the same diet as the farmers themselves who live in the open air. *Farmers, lumbermen, sailors, and soldiers* may preserve health on pork, but brain-workers of all classes, invalids, and delicate ladies and children, should abstain from pork as they would abstain from death. There is not a disease in the whole catalogue which it may not bring on; there is not a pain of which it may not be the father. It is the parent of *dyspepsia, neuralgia, headaches, sleeplessness, "biliousness," constipation, hypochondria*, and every other physical ill.

I am a strong friend of meat, and of fat meat, but I am a bitter enemy of pork for those who live by their brains.

Salted meats in general are less nutritious, less palatable, and less digestible than fresh meats. Ham and bacon are better than other portions of the hog.

If you must eat pork—cannot get hold of anything better—see that it is *thoroughly cooked*, so that the worms in it are all killed. (See *Trichina spiralis*.)

Farmers, mechanics, and laborers may eat *pork* and vegetables with greater freedom. In this country, however, it is eaten by farmers in too great excess. Some are so far away from market that they can get no fresh meat. Let all such keep and kill for their own use plenty of chickens, turkeys, and geese.

The wives and daughters of our country farmers in this country are not on the whole as healthy and strong as the wives and daughters of our city merchants. One reason among others for this fact is, that they are compelled to feed on indigestible pork, and are denied fresh meat. The sturdy master of the house, who is always in the open air, can digest and keep strong on pork and potatoes; but his wife and daughters need a different kind of food.

HARE. The flesh of the hare, like dark-colored flesh in general, is stimulating, and when young and fat, is delicate, and not difficult of digestion. Hares, however, differ much in quality, according to the places where they live. Those that are bred in mountainous countries, from feeding on aromatic herbs, are richer in flavor, and much superior to those inhabiting moist and marshy places. Hare, in whatever manner cooked, especially if made into

soup with the blood, is rich and stimulating ; and therefore improper for invalids, unless in certain cases, where it may be deemed necessary to administer food of this description.

RABBIT. The flesh of the rabbit is more tender and juicy than that of the hare ; but remains longer on the stomach, and is not so nourishing. Wild rabbits are in every respect better than such as are domesticated. The rabbit, like the hare, is in better condition for the table in winter than in summer.

VENISON. The flesh of the *stag*, well known under the name of venison, is not so close-grained as that of beef or mutton ; and when not too fat is, to a stomach in full vigor, perhaps the most digestible of all meat ; but, like other kinds of game, though very nutritious, is more stimulating than mutton. The fat is esteemed a great delicacy, and highly valued by gluttons.

BIRDS. All kinds of wild birds have their flesh of a looser texture than those that are domesticated, and are therefore easier of digestion, though they are for the most part more stimulating.

The common or domestic fowl, although rather slow of digestion, is very mild, and well suited for invalids. *Chicken* is generally the first kind of animal food allowed to the convalescent from fever, and other acute diseases, because it is less stimulating than the flesh of other animals. All white meats, though not so nutritious, are less stimulating than red or dark-colored flesh ; and this should never be forgotten in regulating the diet of invalids. For example, a patient recovering from inflammatory disease, though his appetite and the state of his stomach might allow him to digest a beef-steak in shorter time than the wing of a fowl, yet, from the highly nutritive and exciting nature of the former, it could not be indulged in without a great risk of bringing back the inflammation, and endangering the life of the patient.

Turkey yields a similar but stronger nourishment than the barn-yard fowl or capon, but partridge and most kinds of game are more digestible.

Geese and *ducks*, from the fat and oily nature of their flesh, are difficult of digestion, and are the most oppressive kinds of poultry. Wild ducks, though very savory, are equally indigestible.

All kinds of animal food cured or prepared with salt, vinegar, or spices, are much more indigestible and heating than in their fresh state, and not so nutritious or wholesome. Both fish and flesh, when dried or smoked, having lost their juices by evaporation, become hard and compact. Their digestion requires much greater labor from the stomach than any other kind of food. With many people, however, a small portion of *ham*, *tongue*, or *bacon* at breakfast, by stimulating

the stomach, promotes digestion; with others, again, food of this description remains long on the stomach, and invariably produces irritation. Gelatin exists in the flesh of all the domestic quadrupeds used as food, and constitutes the greater part of young animals; the younger they are the more of this substance they contain, and the less digestible and nutritious is their flesh. Gelatinous substances are not so nutritious nor so easy of digestion as those in which fibrin and albumen predominate. The gelatin contained in the flesh of the sucking pig, in that of birds before they begin to fly, and in all very young animals, presents a glairy or jelly-like appearance. In this state it is neither nutritious nor easy of digestion, and should therefore be avoided by the invalid. The flesh of the calf, of the lamb, and the pig, or that of other young animals, if fed for some time, is firmer, less viscid, and contains more perfect gelatin; hence, it is better adapted for food, but is still far from being so nutritious or easy of digestion as the flesh of the same animals in a state of maturity.

The diminution of fibrin, and the increase of gelatin in the younger animals, are not the only circumstances that distinguish them from those which have attained their full growth. The flesh of the former does not appear to contain (or at least is only provided with a very small proportion of) the stimulating principle, osmazome, which gives the rich flavor to red and dark-colored meats, and which renders them so much more heating than veal, lamb, poultry, and the various kinds of white meat.

VEAL contains a greater proportion of gelatin, and is much more difficult of digestion, than lamb. In order to have good veal, the calf should be fed on the mother's milk until it is six weeks old. The practice of feeding calves on milk adulterated with chalk, or repeatedly bleeding them with the intention of making the meat appear white, cannot be too strongly reprobated. The flesh is deprived of its due proportion of fibrin, and its alimentary properties are greatly depraved.

LAMB. Although it is customary to eat this meat when very young, yet it is not so wholesome as when the lamb has been allowed to suck until it is six months old. The flesh is then of a firmer consistence, fatter, more nutritive, and in every respect superior to that of the lamb killed at two months old.

Chicken, the young rabbit, pheasant, and nearly all the young animals used at table, in which the flesh is soft and tender, without being viscid or glairy, are the most digestible and wholesome of gelatinous food. Albumen is more or less easy of digestion, according to the state in which it is used. When slightly coagulated, it

is *easily* digested ; not coagulated, it is *less* so ; and if taken in a solid state, it is *very* indigestible. But although the digestibility of the albuminous substances commonly employed as aliment is greatly modified by the degree of heat and mode of cooking, yet they are considered very nutritious. The articles of food in which albumen predominates are eggs, oysters, mussels, cockles, the brain, liver, and sweetbread of various animals which give suck to their young.

Eggs. Eggs are composed almost entirely of albumen. The yolk, besides this substance, contains gelatin, oil, and water, in combination with yellow coloring matter. There is also a little sulphur mixed with the albumen. Hence silver spoons used in eating eggs are stained. Raw eggs pass quickly out of the stomach, and produce a gently laxative effect. When taken in this state they are said to be serviceable in jaundice and obstructions of the liver. When boiled in the usual manner they afford a mild strengthening aliment, not difficult of digestion. Hard boiled eggs remain long on the stomach, and are apt to constipate the bowels. They are rendered easier of digestion when used with vinegar as a condiment. The eggs of the granivorous fowls are considered the best ; those of the common hen and the guinea hen are most esteemed. The eggs of ducks, geese, and of all the water fowls, contain a greater proportion of oil, and are more strongly flavored ; they are only suited for vigorous stomachs.

An egg, boiled until the greater part of the white is slightly thickened, without depriving the yolk of its fluidity, and taken with a due proportion of bread, is excellent for a child, or a person in a state of convalescence ; but when the stomach is deranged, eggs, in whatever state, are apt to increase the disorder.

OYSTERS are very nutritive, easily digested, and agree with the stomachs of most people. They are well adapted for convalescents, and may be taken even by those affected with chronic disorders, unless where it is necessary to reduce the patient. They are often resorted to by persons affected with indigestion, being found less distressing to the stomach than any other kind of food. Boiling coagulates the albumen of which oysters are chiefly composed, thus rendering them harder and less easy of digestion ; not nearly so many should be eaten when boiled as in a raw state. Oysters cast their spawn in the month of May, after which they are sickly and unfit for food ; but in July they recover, and are brought to market in August, when they are considered in perfection.

MUSSELS are of a more solid texture than oysters, and are not so easily digested. The eruption on the skin called nettlerash is said

to occur more frequently after eating mussels than any other kind of shell fish. COCKLES, PRAWNS, and SHRIMPS are more wholesome, but should only be slightly boiled. LOBSTERS and CRABS are certainly nutritive, but they remain long, even on the strongest stomachs; their digestion, however, is greatly aided by the use of vinegar.

The BRAIN of the sheep, and the SWEETBREAD of the calf, although they contain a large proportion of albumen, combined with fatty or oily matter, yet preserve their softness when cooked, are easily digested, and very nourishing. The LIVER is also a strengthening food; but is much harder, and more difficult of digestion.

FISH.

Fish are less nutritive than land animals, but afford more nourishment than vegetables. From their great variety they present every degree of digestibility. Fish may be divided into two classes, the fat or oily, and those without fat; but these classes cannot be distinctly separated.

In the *first class* may be placed the herring, mackerel, salmon, eel, the trout, and carp in certain seasons, and to these we may add the turtle; all of which, and indeed every kind of oily or fat fish, are nutritive, but more or less difficult of digestion, and consequently improper for valetudinarians. To the *second class* belong the whiting, haddock, cod, ling, turbot, sole, flounder, and the trout and carp when not fat. All fish of this description, if plainly cooked, and taken without much butter, are more congenial to the stomach, and more easily converted into wholesome nourishment than the former.

WHITING. The whiting is very tender and delicate. It is not very nutritive, but produces no stimulating action on the system. Not being oily or viscid it is easily digested, and therefore well suited to delicate stomachs, and to patients laboring under various complaints, in which the daily use of even the least exciting meat might prove injurious. Physicians know the advantage of varying the diet of invalids, and of those convalescent from acute diseases; and hence, when the use of the mildest animal food is admissible, they frequently order whiting and chicken to be taken at dinner on alternate days, followed by a little sago pudding, or some other mild article of farinaceous aliment.

HADDOCK. In respect to its nutritive qualities, haddock compares with the full-grown barn-yard fowl; and is, perhaps, equally digestible, though not so nutritious.

COD. Cod contains more gelatinous matter, and is rather richer and heavier than haddock; but is an excellent and wholesome fish. The glutinous parts about the head of the cod should be avoided by invalids.

SALMON. Salmon is a more nutritive fish than any of those mentioned before; but being rich and oily, it is by no means easily digested, and requires condiments, the best of which are salt and vinegar. The thinnest part of the fish is the fattest. Salmon is cleaned and boiled as soon as caught, and served up cold, and thus is comparatively easy of digestion, when taken with vinegar and pepper. Salmon is less oppressive to the stomach, and more wholesome, when used in its freshest state; and, as in the greater part of fish when in perfection, there is a deposition of a curdy-looking substance between its layers or flakes.

SALMON TROUT. This fish is not so heating as salmon, and, being less rich and oily, is not so nutritious, but is more under the command of the stomach. All the varieties of trout, though they contain more or less oil, are easier of digestion than salmon; but, like the latter, they uniformly disagree with some persons whose stomachs are not particularly feeble.

The great proportion of fat or oil contained in the **HERRING**, the **MACKEREL**, and more especially in the **EEL**, imparts a degree of richness that renders them very palatable, but with which few stomachs, unless in perfect vigor, are able to contend. The oily matter contained in fish is much more difficult of digestion than the fat of meat. The green fat of the turtle, however, when properly prepared, and not scorched in cooking, is for the most part congenial even to the most delicate stomach; is very nutritious, and easy of digestion. In the West Indies, turtle soup, moderately seasoned, agrees better with patients laboring under chronic dysentery, than other kinds of food.

Perch and many of the fresh-water fish are more digestible than the generality of sea fish; and those caught in rivers and brooks, than others found in stagnant waters. Eels which inhabit ponds and stagnant pools are tough, and not nearly so digestible and wholesome as the silver eel of rapid streams; and the latter soon becomes inferior in every respect, if placed in marshes or dark muddy waters.

The above remarks are sufficient to enable the invalid to judge of the qualities of fish appropriate to the delicate stomach, and to show him the necessity of abstaining from the more oily varieties, and such as are not quite fresh. Rigidity and firmness of texture are the best indications that fish has not begun to spoil.

Fish are not adapted to scrofulous cases, and would be improper when we are desirous of giving tone and vigor to the system.

The best mode of cooking fish for invalids is simply boiling them, or, if perfectly fresh, they may be broiled; but frying is the worst method for a stomach out of order.

PHOSPHORUS IN FISH AND PHOSPHORUS IN THE BRAIN.

A great deal has been said of late about *Phosphorus in the Brain*, and it has been claimed, on the authority of Prof. Agassiz, that those who eat fish are more intellectual than those who do not.

On this subject, the American people, true to their nature, have gone to extremes.

It is true that fish contains phosphorus. It is true that the brain in health contains more or less phosphorus. It is true also that fish is very good food for the brain.

But on the other hand, it is true that meat contains about as much phosphorus as fish. It is also true that meat contains more of the solid constituents and less of water than fish. It is furthermore true that experience has shown that the question of diet and its effect on the brain is a very complicated one, and cannot be so summarily disposed of by an opinion.

It is certainly not true that *the greatest fish-eaters of the world are the most intellectual.**

Phosphorus is not the only food that the brain requires. The percentage of phosphorus in the brain, though very important in deed, is yet small, and is far outweighed by other substances.

Phosphorus is also contained in the husks or bran of wheat, and in fact in all nitrogenous alimentary substances.

There is danger at the present time of making our food too much a matter of chemistry. The natural appetite is our best chemical adviser in matters of diet, at least until the chemistry of the body becomes better understood.

FAT AND OILY FOOD.

This is the least digestible of all the classes of aliment. If used in considerably quantity for any length of time, it is deposited in the cellular structure which binds the muscles together, and consequently augments the bulk of the body without enlarging or increasing the

* The greatest fish-eating nations of the world are the Japanese, the New Zealanders, the inhabitants of the North of Europe, and the Esquimaux. *None of these nations can boast of much intellect.*

strength of the muscular fibres. Oil or fat, if taken in moderate quantity, and well mixed with other food, is not generally indigestible. Oil, for example, is commonly understood to render salad easier of digestion, and appears to prevent raw vegetable substances from fermenting in the stomach, and causing flatulence.

Young people usually have a natural dislike to fat food, and it almost invariably disagrees with them. The antipathy which the stomachs, both of the young and the aged, have to fatty substances demonstrates the impropriety of using them in their diet. (For exception to this rule, see *Consumption*.) A very distinguished American physician, Dr. Beaumont, ascertained that meat containing much fat, and all oily substances, caused a flow of bile into the stomach; and it is well known that persons of a bilious habit are for the most part unable to digest pork, ducks, goose, and other fat meats; when in a liquid state, as in fat broths or gravy, it is still more objectionable. Oily and fat substances, if taken while hot, are less digestible, and more apt to disorder the stomach than if eaten when cold.

OLIVE OIL. The finest olive oil seldom offends the stomach. Before reaching the United States it always becomes more or less rancid, and never has the delicious flavor of the pure oil used at table in the countries which yield the olive. This oil, when in perfection, is tolerated by the delicate stomach, even when unaccustomed to it, where the mischievous effects of melted butter would not fail to be experienced.

Butter, in the operation of melting, acquires properties which almost invariably render it injurious to persons subject to disorders of the digestive organs.

ALMONDS, WALNUTS, FILBERTS, &c., chiefly composed of fecula and oil, are proverbially indigestible.

CASEOUS OR CHEESY FOOD.

MILK. The nutritive properties of milk hold a middle rank between vegetable and animal food. It is strengthening, nutritive, and easily assimilated. It is mild, soothing, and, instead of exciting the system and quickening the pulse (like beef-tea or other preparations of animal food), has a tendency to produce languor and disinclination for exercise. The milk of different animals differs in its composition and nourishing qualities, and it varies according to the food on which the animal has been fed.

Cow's MILK. Cow's milk, being the most plentifully furnished, is one of the greatest importance as an article of diet. In its pure state, it is only adapted for strong stomachs; but in cases where

we wish to supply the system quickly with much nutritive matter in small bulk, it is one of the best aliments. It should not be taken by persons laboring under indigestion, nor by those with weak stomachs. Under such circumstances it is very apt to turn acid on the stomach. To prevent this effect, a small quantity of *lime water* often proves a useful addition. In all acute diseases milk should be prohibited, and, if taken undiluted, it is not well suited for the convalescent.

The albuminous part of milk is not coagulated into a mass by boiling like the white of an egg; this is owing to the greater quantity of water with which it is united. By the action of heat a thin film rises to the surface. By skimming this from time to time, the whole of the albumen may be removed. By this process milk is rendered less nutritive, but more digestible, and is, therefore, better adapted to weak stomachs than if taken in a pure state.

ASSES' MILK is not so rich in cream and cheesy matter as that of the cow or goat, but contains more sugar, and is much easier of digestion, being eminently adapted to patients whose digestive organs are in a debilitated condition. In many instances it proves gently laxative, and in this respect differs from that of the cow, which, in most cases, has rather an opposite tendency. To persons threatened with consumption, and in the early stages of that disease, more especially when associated with a deranged state of the stomach and bowels, the milk of asses, when it can be procured in sufficient quantity, is of the greatest service.

GOAT'S MILK. The milk of the goat is richer and stronger than that of the cow, but does not contain so much sugar. It is easier of digestion to many stomachs than the milk of the cow.

CURD. The curd or albuminous part of milk is separated from the whey by acid, alcohol, and other substances, but the best coagulating agent is the gastric juice. "The infusion of a piece of calf's stomach (*rennet*) not larger than a half-dollar, will coagulate a quantity of milk sufficient for making a cheese of sixty pounds' weight, although the quantity of coagulating matter cannot in this case exceed a few grains"

Milk coagulates upon all stomachs, and the curd thus formed is soft and loose; but when prepared out of the body, it often disagrees with the digestive organs, and often oppresses the stomach.

WHEY. When milk is coagulated by the addition of a small piece of rennet, the whey, when separated from the curd, contains some butter and curd in solution. It also holds in solution nearly all the sugar of the milk, and is, therefore, more liable than milk to ferment in weak stomachs, and produce flatulence. The whey from

mare's milk contains a greater quantity of sugar than that from any other animal. Whey is not so nutritious as milk, but affords an excellent demulcent drink in consumption, coughs, jaundice, dysentery, and other diseases.

CREAM. Cream is more easily digested than butter, and when mixed with tea or coffee not only render these beverages more palatable, but corrects their stimulating principle.

Cream and Fat Meat in Consumption.—Of late years consumption has been treated by cod-liver oil, *cream*, and fat meat, and with good success. Some patients cannot take cod-liver oil; it is too nauseating. Such patients are often benefited by *cream* and *fat meat*.

It is a very interesting and *suggestive fact, that patients who are consumptive, or are inclined that way, have an aversion of a most positive character to fat meat.* This is a subject to which I have given much attention. I have made inquiries of my patients to a considerable extent, and have found that the majority of consumptives have a positive aversion to the fat of meat, and that they usually cut it off on the plate. Such patients should try and learn to use fat fresh beef, by eating a very little at a time, with other food.

Cod-liver oil seems, in a measure, to take the place of fat.

BUTTER. Butter, like other animal oils, unless very sparingly employed, is not congenial to weak or delicate stomachs, or to persons of bilious temperament; but taken in moderation, when fresh and good, it agrees with any age or constitution. When slightly affected by heat it is very oppressive to the stomach, and often produces heartburn. Persons of delicate constitution, or those affected with indigestion, should, therefore, avoid eating any food fried with butter.

CHEESE. It is a strong and nourishing food to those who can digest it, but is only adapted to robust constitutions and to those who take much exercise. It is almost invariably hurtful to persons whose digestive organs are weak.

Toasted cheese is particularly injurious to the delicate stomach.

FARINACEOUS FOOD.

The base of all the substances of this class is a distinct principle, possessed of peculiar properties, named *fecula*, or starch. This is the most widely diffused principle of the vegetable kingdom, and is met with in various parts of plants, in the seeds, roots, pith, or leaves; and appears intended by nature to be the chief food of mankind. *Fecula*, however, is never used in its pure state; it is

always associated with different substances, such as gluten, sugar, albumen, mucilage, &c.

The elementary principles of fecula and gum are the same, yet they differ widely in their chemical properties and nutritive qualities. Fecula exists in the various farinaceous substances in the form of numerous globules or grains, more or less round or elongated, each formed of a succession of concentric layers, one within another, like the coats of an onion, having the same elementary composition, but varying in their physical qualities; the external coats being endowed with a much greater power of resisting the action of the agents capable of modifying the fecula. Hence, the stomach has very little influence in changing the formation of fecula in its organized condition, and it cannot be considered as actually nutritive until submitted to the action of heat. Whatever mode of cookery is adopted, the heat produces the effect of bursting all the grains, and thus renders fecula one of the most easily digested substances, although completely useless as an article of diet until this physical change be effected.

SWEET POTATO. It is very nutritious, and when simply roasted or boiled, forms a very palatable and wholesome food. As it does not appear to be so easy of digestion as the common potato, it should be eaten more sparingly by those who have weak stomachs.

Yam. This root very much resembles the sweet potato in its properties. It forms a very extensive article of food in the West Indies, and is very nutritious. It is sometimes ground into flour and made into bread.

WHEAT. The most important of all farinaceous substances is wheat, which, besides fecula, contains a large quantity of gluten; and hence of all the grains wheat is the best adapted for making bread. Animals do not live for any length of time when fed on gelatin, fibrin, or albumen singly; in general, they cause such disgust that the animals prefer dying rather than taking them. Gluten, or the adhesive part of wheat, will, on the contrary, nourish an animal well, and for a long time. The flour or meal of other farinaceous seeds does not contain a sufficient quantity of gluten to allow it to undergo what has been called the *panary fermentation*, and cannot, therefore, be made into loaves like the flour of wheat.

INDIAN CORN. The meal made from Indian corn furnishes a most wholesome and nourishing food, well adapted for the support of the active and laborious class. Indian bread, when properly prepared, were it not for habit and fashion, would be preferred to bread made from wheat, both on account of its agreeable flavor and delicious taste. In the Southern and New England States it is prepared

in a great variety of ways, and is a most excellent article of food.

BREAD. Bread differs widely from the flour of which it is composed, and may be considered as a new substance. It is easier of digestion than any other preparation of flour, and mixes more readily with water, but is considered less nutritive. Newly baked bread, however, swells in the stomach, and is not easily digested. Indeed, the process of fermentation does not appear to be completed until the bread is cold; for new bread differs from old not only in its effects, but in smell and taste. "The best bread," says Dr. Coghan, "is made of pure flour of good wheat, sufficiently leavened, somewhat salted, well moulded, well baked, and at least a day and a night old, and not past four or five days old, except the loaves be very great." Besides the nutritive qualities of bread, it prevents the bad effects which would result from the use of too much animal diet, rich soup, and other concentrated food. It also serves to divide and give our aliment a proper bulk and consistence. It may be allowed to the stomach of the weakest patient. It neither stimulates nor relaxes the system, and is justly called the staff of life.

There are three sorts of bread, the white, the wheaten, and the household. Fine white bread is made of flour only; wheaten bread, of flour mixed with the finer bran; and household bread of the whole substance of the grain, including the coarser bran. Fine white bread is the best, and to most people is more agreeable to the palate than any other kind of bread, being entirely deprived of the bran; but it is not so nourishing. The common coarse bread, which contains a considerable quantity of bran, is much more nutritious than white bread; so much so that dogs fed on the former have remained in health, whereas those fed on white bread have gradually wasted away and died. This difference, it appears, arises entirely from the absence of the bran. From the mechanical action of the particles of bran upon the lining membrane of the bowels, the household bread acts on many persons as a gentle laxative. The white bread, on the contrary, has a tendency to constipate the bowels, because the astringent action of the starch which it contains is not counteracted by the bran.

BREAD-MAKING.

Aërated Bread.—This is made by mixing the dough with water and *carbonic acid*. This kind of bread is made in large manufactories erected on purpose. It cannot well be made in a private family. The bread made in this way is quite palatable,

and is easier of digestion than ordinary fermented bread. When *toasted* it is excellent.

Prof. Horsford's Process.—Prof. Horsford, of Harvard College, has devised and popularized a method of bread-making by the use of *phosphate of lime* and *bi-carbonate of soda*, so as to form neutral phosphate of lime and phosphate of soda, carbonic acid being evolved.

The advantages of this process are:

1. It supplies phosphorus to the bread, of which it is deprived by sifting.

2. It is easily made, is baked in half an hour, and is palatable.

Fermented bread is usually *less* digestible when hot than bread which is raised by these other processes.

Heavy, soggy bread, hot or cold, should never be eaten except by those who are in imminent peril of starvation.

Various articles are used in the adulteration of bread; the most innocent of them is the potato. Alum is much employed to give whiteness to bread, and to prevent the loaves from sticking to each other in the oven. The daily introduction of small quantities of alum into the stomach must interfere in some degree with the exercise of its functions, and to those troubled with indigestion it must prove highly injurious. Persons affected with stomach complaints should, therefore, be careful to get their bread made without alum. The carbonate of ammonia (sal volatile) is extensively used instead of yeast in making the finer kinds of bread; but it does no harm, and is rather advantageous than otherwise.

There is phosphorus in the bran of wheat. This fact is worthy of consideration by those who live entirely on white bread.

There is, however, danger of going to an extreme in the matter of bran bread. *Those who do not like it should not as a rule eat it.*

This subject I have discussed and explained more fully under "*Constipation.*" *Those whose stomachs are very weak and sensitive, and liable to acidity, oftentimes cannot digest easily bran or Graham bread.*

Indian meal or corn bread—including, of course, the luscious johnny-cakes—is in some respects more nutritious than white wheat bread, and should be used by those who love it and can digest it.

Pastry is not so injurious as is commonly supposed, provided the crust is *light and flaky*. *Soggy pie-crust is a crime. But yet pastry and cakes should not be eaten largely, and never should constitute, as they too often do, especially in country places, the chief part of a meal.*

BUCKWHEAT CAKES. In the United States, *buckwheat cakes* are

a staple article, especially in cold weather. In Europe they are little known.

When they are well made they are healthful. To be well made they should be light, crisp, and sweet. In cold weather they are eaten freely with sugar, butter, molasses, syrup, and gravy, because at that season of the year we need heat-producing substances. Buckwheat is not as nutritious as wheat or corn, but it helps our variety of food, is very palatable and easy of digestion, and therefore should be encouraged. *Buckwheat cakes should not be used too exclusively*: other food—wheaten bread, meat, &c.—should be combined with them.

Buckwheat sometimes produces eruptions on the skin, and there are persons to whom it seems to be poisonous.

OATS. Oatmeal, prepared in various ways, constitutes one of the principal articles of diet in Scotland, and in some parts of England, where it is found both wholesome and nutritious. It is, however, inferior to wheaten flour in nutritive qualities. Oats contain a considerable proportion of sugar, and on this account cakes and other preparations of oatmeal are apt to run into fermentation in the stomach; they are also more heating to the system than either wheat or barley.

RICE. Rice contains about eighty-five parts of starch in the hundred, and having no stimulating matter in it to quicken digestion, remains longer on the stomachs of some persons than other farinaceous substances. In India, and other eastern countries, where it constitutes the principal food of the inhabitants, it is usually taken with curry powder, peppers, and other stimulating condiments, in order to assist digestion. Mixed with other food it is wholesome and well adapted for delicate stomachs. Rice-water is an excellent demulcent drink when there is irritation of the bowels, dysentery, or diarrhoea. Ground rice and milk, flavored with orange peel and sweetened, is a valuable article of diet during convalescence. Some of the French authors strongly recommend rice diet for those affected with red gravel.

BARLEY. Barley contains a large proportion of starch, and much saccharine matter. The latter renders it well adapted for distillation. Dr. Cogan quaintly remarks, that "Though barley, as Galen saith, is of a cooling nature, yet it maketh such hot drinke that it setteth men oftentimes in a furie."

RYE. Rye flour contains a greater quantity of gluten than any other kind of flour except that of wheat, and also a considerable proportion of mucilage; when well kneaded it ferments, and partially rises; the bread is of a brown color and not disagreeable to

the taste, but is rather slow of digestion; it is also apt to turn acid on the stomach, and to relax the bowels of those unaccustomed to its use. Hence bread made of wheaten and rye flour is found very serviceable to persons who are subject to constipation of the bowels.

This grain yields a black, morbid excrecence, curved like the spur of a fowl, called *ergot of rye*, which is often of the greatest service in the hands of the skilful accoucheur.

POTATOES. Potatoes contain a large proportion of starch, but no gluten; they improve in quality, becoming more farinaceous or mealy from the time they are taken out of the earth until they become waxy, when their nutritive qualities diminish, and they are less easy of digestion. The soluble nutritive matter contained in the potato is not nearly so great in the same bulk as in any of the grains. It has been computed that 2 lbs. of wheat contain as much nourishment as 7 lbs. of potatoes.

Potatoes are easy of digestion only when mealy. Many persons use potatoes with animal food, in preference to bread, and, when not new or waxy, they constitute a very wholesome substitute. They are not considered a suitable article of diet for invalids, particularly for those affected with indigestion. The form of cookery best adapted for potatoes is, boiling in water containing a considerable quantity of salt in solution. When saturated with the fat of roast meat they are suited only for the strongest stomachs. When mashed they are swallowed without being sufficiently mixed with the saliva, and are, consequently, less easy of digestion. When roasted they sometimes agree best with persons whose digestive organs are weak; but this is not generally the case; and when overdone they are insipid, and deprived in a great measure of their nutritious qualities. But, whatever mode of cookery is employed, they should be used as soon as possible after being removed from the fire. The starch of the potato closely resembles arrow-root powder, for which it is very frequently sold. This fraud, however, does no harm, for the one starch is little inferior to the other, and their properties are the same. Potatoes are also extensively employed to adulterate bread, and it would be well if nothing worse were used for this purpose.

Potato is not the most valuable kind of food. Potatoes are largely composed of *water*. According to Pereira it takes 10½ pounds of potatoes to give us as much nourishment as is contained in *one pound* of beef. *Potato diet, when exclusive, makes potato brains*. Witness the Irish peasantry. Other causes besides their diet operate to depress these people, but the potato must

have a portion of the blame. Potatoes should always be used with meat, fish, eggs, and bread, and should never constitute the principal part of the meal. We should study the effects of diet not alone on the muscle, but on the *brain*, on the intellect. The Irish peasantry have strong muscles, but their intellects are dull and hard.

Nothing very great or very good was ever achieved by a nation of potato-eaters or of vegetarians.

PEAS. Peas, when green and young, are watery, and contain little nourishment, but when properly dressed are light and wholesome. When ripe and dried they are used in the form of pudding and in soup. In both ways they are very nutritious, but the former is difficult of digestion, and only suited for the strong laboring classes. The soup, though less objectionable, should be avoided by those troubled with stomach complaints. Peas, when full grown and dry, in whatever manner they may be cooked, are remarkable for their production of flatulence.

BEANS. Beans, when young, possess nearly the same properties as peas. The pod of the kidney bean is a succulent, tender, and much esteemed vegetable, though not very nutritive. The bean itself, when ripe and still tender, is more nutritious, but not so easy of digestion. The dried kidney beans contain eighty-four per cent. of nutritive matter, of which fifty are pure farina, and the rest gluten and mucilage. Hence they are more nutritive than wheat or any other kind of pulse. They are much more wholesome than peas, and are well suited to correct the effects of fat animal food. They agree well with the laboring classes who are accustomed to their use, and they are very fond of them. "In certain parts of Scotland," says Dr. Cullen, "the farm servants would not engage unless their masters stipulated that they were to receive so much meal of this bean by the day or the week."

CHESTNUTS. Chestnuts are composed almost entirely of fecula and sugar, and form one of the principal articles of diet in many countries. If kept for some time after they are gathered, they become sweeter, more mealy, and easier of digestion; but, notwithstanding, they are unsuited to weak stomachs.

ARROW-ROOT. This well-known powder, which consists of pure starch, is obtained from the root of a plant which is a native of the West Indies. Boiled in water it forms a mild nutritious jelly, much used as food for children and invalids. It is prepared in the following manner: A portion of the powder, mixed with a little cold water, is to be made into a paste by rubbing it in a basin with a spoon; over this boiling water is to be poured. It should be stirred briskly at the same time; then boiled five minutes and sweetened

with sugar. A little milk and nutmeg may be added, or a small quantity of Sherry or Madeira wine, according to the state of the patient. Port wine does not answer so well because it precipitates the starch. Half an ounce is sufficient to make half a pint of the jelly.

SAGO. Sago is composed of starch, with a little salt and coloring matter. It is derived from the pith of several species of palms. The best is called *pearl sago*. It soon becomes sour if allowed to remain in the form of powder, and is, therefore, made into grains by pressing it through a strong coarse sieve when half baked. Potato starch is easily formed into grains in the same manner, and is often fraudulently sold as sago. The usual way of preparing sago is to put a tablespoonful of the grains into a pint of hot water, and allow it to remain at the side of the fire for two hours; then to boil it for a quarter of an hour, stirring it diligently during the boiling. Sugar and milk, or wine, may be added to it in the same manner as with the arrow-root.

TAPIOCA. Tapioca is the produce of the roots of a plant which grows in great abundance in Brazil and in the West Indies. The roots in their raw state are called *cassada*, and are strong poison, yet the starch extracted from them is similar in its nutritive qualities to sago, which it resembles in appearance, but is not so high-colored, and is formed into larger grains. It is prepared in the same manner, only that it does not require to be macerated, or boiled more than half the time.

SALER, which is obtained from different kinds of the *orchis*, the species of arrow-root called *Tous les Mois*, and the vegetable extracts above noticed, are all merely varieties of starch, and do not differ in their properties. They are very generally prescribed as diet for the sick, and it is not of the slightest consequence which of them is preferred, unless as a matter of taste. They may be either taken simply boiled in water, or with the addition of milk or wine, according to circumstances.

MUCILAGINOUS FOOD.

Mucilage is a distinct principle abounding in different parts of vegetables, but is never found *alone* in the mucilaginous substances used as food. It is always associated with sugar, or some bitter, aerid, or acid principle, without which it would be indigestible, and almost devoid of nutritive properties. Several of the vegetable substances, usually classed under this head, contain more sugar than

mucilage, and in all there is a large quantity of fibrous and coloring matters, which are entirely indigestible. Hence the evacuations from the bowels are more copious after this than from any other kind of aliment. The numerous herbs and roots which belong to this class are more valuable in correcting the effects of stimulating animal food than from their own nutritive properties.

CABBAGE. Red and white cabbage are much relished by many people, but they have a great tendency to ferment in weak stomachs, and are only suited to persons of robust constitutions who take plenty of exercise.

BROCCOLI AND CAULIFLOWER. These are much superior to cabbage, being more tender, easier of digestion, and less apt to produce flatulency.

SPINAGE yields very little nutriment, and is, perhaps, the least nutritious of all the vegetable substances used at table; it passes quickly out of the stomach without being digested, and imparts its green color to the fæces.

LETTUCE. The lettuce is generally used as salad, and is the most tender and delicate of all the vegetables eaten in a raw state. It is cooling, and has a tendency to induce sleep; but, when employed with this intention, it should not be very young, and must be eaten without vinegar. This, as well as all kinds of salad and raw vegetables, is rendered more wholesome by an ample accompaniment of the usual condiments; but, in whatever manner taken, they rarely agree with weak stomachs.

ASPARAGUS. Asparagus is a very wholesome vegetable and is easily digested. It does not create flatulency or acidity, but with some people acts as a diuretic.

ARTICHOKE. Artichokes afford a light and tender food, and are similar in their properties to asparagus.

ESCULENT ROOTS. The principal mucilaginous roots used as food are the carrot, turnip, Jerusalem artichoke, and the large Spanish or Portuguese onion. All the roots of this description are chiefly composed of mucilage, sugar, indigestible fibrous substance, and essential oil.

CARROT. In its wild state it is hot and acrid; but by cultivation it has been greatly changed, and is now a nutritious and wholesome vegetable. It contains a considerable proportion of sugar, and a much larger quantity of fibrous matter. It is not considered quite so easy of digestion as turnip, and in general acts gently as a laxative. Carrots and turnips should be well boiled and eaten when young. The carrot forms an excellent poultice for foul and ill-conditioned sores.

TURNIP. Turnip is considered one of the best vegetables used at table ; but is rather flatulent, and requires seasoning.

BET ROOT. The red beet is more nutritive than any other root except the potato ; but it extricates so much gas in the stomach and bowels as to prevent it from being much used as an article of diet. Beet root contains a large proportion of sugar ; 1½ lbs. yield 1 lb. of sugar.

JERUSALEM ARTICHOKE. This is the root of a species of sunflower, which has obtained the name of artichoke from its similarity in flavor to that vegetable. It is considered a very delicate vegetable ; but requires the addition of pepper, salt, or other condiments, to prevent flatulency.

ONION. Onions afford a considerable proportion of nourishment. When boiled they are mild, succulent, and seldom disagree with the stomach. The French introduced the use of onion soup, as a restorative after dancing, sitting up late, or any unusual fatigue ; and this practice is now very generally followed in other countries. Sir John Sinclair was of opinion that onions possess more nourishment than perhaps any other vegetable. "It is a well-known fact," says he, "that a Highlander with a few raw onions in his pocket, and a crust of bread or bit of cake, can work or travel to an almost incredible extent for two or three days together, without any other food."

The **LEEK**, **GARLIC**, and **SHALLOT** are similar in their qualities to the onion.

CUCUMBERS are difficult of digestion, and are the most unwholesome of all raw vegetables. "The digestibility of *celery* is greatly increased by maceration in vinegar."

The *stimulating* vegetable substances are *horseradish*, *mustard*, *parsley*, *sauer-krant*, *pickles*, *spices*, &c. These, and all vegetable productions of this description, employed as condiments to aid digestion, should be taken sparingly by invalids. *Horseradish* is considered the best condiment for the prevention of flatulency.

SACCHARINE OR SWEET FOOD.

"Sugar," says Dr. Prout, "is the only crystallizable product employed in considerable quantity as an aliment ; and by the perfectly healthy stomach seems to be readily assimilated. There are, however, certain states of disease in which this organ appears to lose, in a great measure, the power of assimilating this principle ; and in such states of disease, sugar, consequently, is ill-adapted as an aliment." Sugar is most abundant in the sugar-cane, in the

grape, and fruits in general. The roots which possess the most are the beet, carrot, and parsnip.

SUGAR. As I explained under Physiology, *the starch of our food is converted into sugar during the process of digestion.*

According to Banting, sugar and saccharine food produce *obesity*. Therefore, corpulent and puffy persons who want to reduce their weight should abstain from sugar so far as possible.

He carried out his ideas practically in his person, and with very good success. Others have tried the same system and have seriously injured themselves.

It is said that the negroes of the South become fat during the sugar season.

When sugar is eaten freely in the form of candies, confections, cakes, &c., it should be eaten with or just after our meals—not before meals—and better still, with some acid, like lemonade, sour wine, cider, or fruits.

FIGS, RAISINS, PRUNES, DATES, and other dried fruits, contain a large quantity of sugar and mucilage. To many people they are salutary and easy of digestion. To some they prove gently laxative, and are very serviceable in this respect; but, from the quantity of sugar contained in them, they are very liable to undergo fermentation in the stomach, and to most people are more or less oppressive.

HONEY is very little used as an article of food. It ought never to be taken by the sick and delicate, because it is detained long on the stomach, and frequently causes flatulence and acidity.

ACIDULOUS FOOD.

Under this head are placed the different species of fruit used at table. These are, in general, composed of mucilage, vegetable jelly, sugar, water, malic, acetic, and other acids, and some of them contain a portion of farinaceous matter. They afford less nourishment than any other class of aliment, and are considered more as a luxury than as articles of food. When taken as a dessert, unless used very sparingly, they are particularly injurious to invalids, because they interfere with the full meal which has just preceded them. When ripe, and taken at proper times, they are light, refreshing, and very wholesome. In intertropical countries there is always an abundant supply of various delicious and fragrant fruits, which are both cooling and refreshing, and many of them, containing farinaceous matter with a considerable proportion of sugar, afford nourishment well adapted to the indolent inhabitants of warm

climates. In fever and inflammatory disorders (with the exception of dysentery, diarrhœa, and other affections of the alimentary canal) the juicy and watery fruits, such as grapes, oranges, &c., tend to alleviate thirst, are cooling, and very grateful to the patient. In spitting of blood, and other similar complaints, they serve as a valuable auxiliary to more powerful means in lessening the activity of the circulation, and thus moderating or preventing the return of these discharges. The acid fruits, such as lemons and limes, are well known to be specific in scurvy; and the infusion of tamarinds is a useful remedy in vomiting of blood from the stomach.

Owing to certain peculiarities, which we are unable to explain, the stomach is more capricious with respect to fruits than any other article of diet. The stone fruits are considered the least digestible, and the most disposed to fermentation in the stomach. They differ considerably, however, in these respects. Of those in common use, the various kinds of plums, probably, most disagree with the stomach and bowels.

The PEACH, APRICOT, and NECTARINE are the best of the stone fruits; and, when perfectly ripe, seldom disorder the digestive organs. The peach is the most esteemed, and is the easiest of digestion. CHERRIES, even in large quantities, are not so unwholesome as is generally imagined. In various parts of Italy, this fruit, with bread, constitutes the principal food of the lower orders, and agrees well with them, being much better suited to the system, when heated and excited by the warmth of summer, than much animal food.

The STRAWBERRY, RASPBERRY, and GOOSEBERRY are wholesome fruits. APPLES and PEARS are the most nutritious, but as their texture is firmer they require more labor from the stomach, and are, generally speaking, improper for invalids. Pears, being the softest, are more easily digested. The great English physician, Sydenham, allowed no other aliment to his patients, in the febrile stages of small-pox, erysipelas, and quinsy, than *boiled apples*.

The MELON contains more farinaceous matter than any of the fruits previously mentioned. It should never be eaten after dinner without a plenty of pepper and salt, and is altogether improper for persons with weak stomachs.

Of the smaller berries, the *cranberry*, *bilberry*, &c., when baked, are very wholesome, and seldom disagree with the stomach. Indeed, many fruits, otherwise unwholesome, are rendered salutary by cooking, and all fruit pies are excellent articles of diet, if the *soggy* pastry, which is very indigestible, be rejected. *Currants*, *mulberries*, and the more acescent fruits, cannot be tolerated by many stomachs.

CONDIMENTS.

SALT is not only indispensable to man, but appears to be necessary to other animals, many of which, in a wild state, seek for it with the greatest avidity. Abstinence from salt soon occasions disorder of the digestive organs, paleness of the countenance, and emaciation; and unsalted diet almost invariably has the effect of generating worms in the intestines. Bread is rendered more grateful to the palate and easier of digestion by the addition of salt, about twelve to sixteen ounces of which are generally mixed with each bushel of flour.

VINEGAR is very serviceable in aiding the digestion of celery, lettuce, beet-root, and other raw vegetables, and in preventing them from inducing flatulence. It is equally useful in promoting the digestion of rich and oily substances, such as salmon. Lemon-juice has a similar effect when used with goose and wild fowl; upon the same principle apple-sauce is, probably from the malic acid which it contains, eaten with pork.

SPICES AND AROMATICS. The various spices and stimulating vegetable condiments should be used sparingly by invalids. They are only wholesome for persons in health, when the stomach has to contend with food known to be difficult of digestion. The habit of using them daily injures the tone of the stomach and impairs the digestive functions. In warm climates, the stimulating action on the stomach of the different species of pepper and aromatics is more particularly requisite; and these, when not used in excess, are in general decidedly beneficial.

ADULTERATIONS OF FOOD.

That food is more or less adulterated, everybody well knows; the extent to which adulteration is carried, very few suspect. In France the laws are so rigid that very many of the articles of food are kept pure; in England and the United States, on the contrary, nearly everything is adulterated. Wherever it will pay, men will adulterate articles of commerce. Food is adulterated in order

1. *To increase its size and weight.*
2. *To enable one dealer to undersell another, by lessening the expense of manufacture.*
3. *To improve its color, or taste, or appearance.* It is for this

purpose that candies are largely adulterated with poisonous colors.

Wheat flour is adulterated with *alum* in order to make it lighter and whiter. Bakers' bread is whiter and lighter than home-made bread, on account of the alum which it contains. *Alum*, however, gives it an insipid taste and also makes it less healthful. *Bakers bread* is also adulterated with *potatoes and corn or rye meal*. These substances are, of course, harmless.

Cocoa is adulterated with *starch, flour, sugar, oxide of iron, arsenic, and Venetian red*. These latter substances are used to improve its color. Dr. Hoskins, in his excellent work on this subject, says that American cocoa and chocolate are the best in the market.

Butter is adulterated with *water, salt, lard*, and even flour.

Honey is not only adulterated, but is actually *manufactured*. It is made out of *sugar, syrup, water and flavoring extracts, cream of tartar, and alum*. None of these substances are injurious, except *alum*. Manufactured honey is less palatable than natural honey.

Sugar is adulterated with *flour and sand*. The latter article is put into brown sugar to increase its weight.

Spices and condiments are adulterated, especially when they are sold in powder. Dr. Hoskins says that the *insects* which prey upon spices are often ground up with them.

Ginger and pepper are ground up with *roots, flour, insects*. *Cloves* are adulterated with various barks. *Cayenne pepper* even is mixed with *salt and corn meal and red lead*. Lead may cause that dreadful disease—*lead poison*. *Mustard* is fearfully adulterated with *flour and turmeric*. The latter is used to restore the color after it has been whitened by adding *flour*. While I was acting as surgeon in the navy during the late war, I found that the mustard that was brought to us was almost tasteless. It consisted very largely of flour. When I wished to make a mustard plaster I found that it was necessary to use a very large amount.

Candy is one mass of adulteration. According to Dr. Hoskins, confectionery is colored by *chromate of lead, gamboge, cochineal dye, bisulphuret of mercury, Antwerp blue, Prussian blue, Brunswick green, verdigris, emerald green, mineral green, Scheele's green, gypsum, whiting, flour, rice*.

The character of most of these substances, especially of the leads, is well known. They are fearfully poisonous, although, like all other poisons, they can be used in moderation without injury, and some of them, it may be, with benefit. *Large quantities* of colored can-

dies are unquestionably injurious, and should not be allowed to children. Let them rather have abundance of *ripe fruit*. If candy must be eaten, let it be taken with our meals or just after, or with some neutralizing acid, like *cider*, sour wine, or lemonade.

Candies are flavored with *fusel oil* and *Prussic acid*. *Colorea* confectionery should be banished from our homes.

Vinegar is adulterated with *sulphuric acid*.

Pickles are made of a *salable* green color by letting them "stand for twenty-four hours in copper or brass pans."

Milk, I need not say, is adulterated with *water*; sometimes also, it is said, by other substances, such as *chalk*, *flour*, &c. Hoskins is of the opinion that these—chalk and flour—are not used, to any extent at least, in the adulteration of milk.

The "slop milk" from the distilleries is unfit for man or beast. "*Slop milk*" is adulterated by first adulterating the corn in the distilleries. This horrible nuisance, once so rife in our cities, has been of late measurably abolished.

For the adulteration of *tea*, *coffee*, *fermented and distilled liquors*, *tobacco*, *opium*, &c., see "*Stimulants and Narcotics*."

Drugs and medicines are abominably and criminally adulterated; but this subject is hardly appropriate for a book like the present volume. *Physicians' prescriptions often fail simply because the medicine ordered is adulterated*.

Hoskins, who writes well on this subject, and to whom I am indebted for many facts, speaks thus strongly:

"When we come to examine the list of adulterated articles of food, we are surprised at its extent. Nothing seems to have escaped which is not in its nature insusceptible of vitiation. Bread and butter, tea, coffee, cocoa, sugar, milk, spices, confectionery, preserved fruits and meats, vinegar, pickles, oils, wines and liquors, almost every article which we find upon our tables, bear upon them the trail of the serpent in the form of such delectable substances as salts of copper and arsenic, the chromate, oxide, acetate, and carbonate of lead, bi-sulphuret of mercury, gamboge, chromate of potash, Prussian blue, Brunswick green, catechu, alum, indigo, sulphuric acid, Venetian red, yellow ochre, bronze powders, to say nothing of less injurious, though not less dishonest, additions of plaster of Paris, chalk, starch, burnt peas, beans, rye, and chicory, water, turmeric, lard, meal, potatoes, &c. All of these articles, and not a few others of the same kind, shall be demonstrated to exist in the food consumed daily by the people of this country.

"The more poisonous substances are usually found in minute, though by no means homœopathic quantities; but this makes their

only the more deadly, because it admits of their constant and undetected use, until the constitutions of the victims are fatally undermined. Sometimes, however, immediately serious and even fatal results occur, and we not uncommonly see accounts of the death of children, especially from the use of colored confectionery. How many attacks of 'colic,' 'vomiting,' 'dysentery,' 'sick headaches,' how much nervousness, blindness, deafness, dyspepsia, or even paralysis and insanity, might be traced by rigorous investigation to such sources, it is frightful to think of."

TABLE OF ADULTERATIONS. (*After Hoskins.*)

	ADULTERATIONS FOR BULK AND WEIGHT.	ADULTERATIONS FOR COLOR, TASTE, ETC.
Arrow-root.	Cheaper arrow-roots and starches.	
Brandy (often entirely factitious).	Water, neutral spirits, whiskey, rum.	Burnt sugar, sugar, spirits of nitre, fusel oil, kino and other astringents, acetic acid.
Butter.	Water, lard, salt.	
Bread.	Corn-meal, potatoes, rye-meal.	Alum.
Bottled fruits.		Salts of copper.
Confectionery.	Starch, flour, plaster of Paris.	Cochineal, indigo, Prussian blue, ultramarine, carbonates of copper and lead, red lead and the chromate of lead, or chrome yellow, gamboge, true and false, Brunswick greens (either oxychloride of copper or a mixture of chrome yellow with Prussian blue or indigo), emerald green or arsenite of copper, various ochres (umber, Sienna, etc.), bronze powders.
Coffee.	Chicory, carrot, peas, beans, corn.	Burnt sugar.
Cocca and chocolate.	Arrow-root, starch, sugar.	Red and brown ferruginous earths.
Cider (often entirely factitious).	Water.	Honey, sugar, tartaric acid, whiskey, alum, burnt sugar.
Cayenne.	Corn-meal, salt.	Red lead, Venetian red.
Ginger.	Corn-meal.	Turmeric.
Gin.	Water, sugar, neutral spirits.	Flavoring substances.
Honey (often entirely factitious).	Sugar, water, glucose.	
Lard.	Water.	Salt.
Mustard.	Wheat flour, corn flour, salt, Cayenne.	Turmeric.

	ADULTERATIONS FOR BULK AND WEIGHT.	ADULTERATIONS FOR COLOR, TASTE, ETC.
Milk.	Water.	Burnt sugar, salt, bi-carb soda.
Pickles.		Salts of copper.
Potted meats and fish.		Bole Armenian. Ven. red.
Rum.	Water.	Burnt sugar and flavoring substances.
Sugar (refined).	Wheat flour.	
Spices.	Flour, dirt, corn-meal, inferior or cheaper spices.	
Tea.	Lie tea, stalks and leaves of other plants.	Black-lead, gum, Prussian blue, gypsum, indigo.
Vinegar.	Water.	Burnt sugar, sulphuric acid.
Whiskey.	Water, neutral spirits.	Spirits nitre, fusel oil, burnt sugar, acetic acid.

WATER. Water enters abundantly into the solids of the body, and is the basis and largest portion of the fluids. It is an essential constituent of all living bodies; and, as it is incessantly expended during life, the waste must necessarily be supplied, to preserve the proper proportion of fluid and solid matter requisite for the due performance of the various functions, and the preservation of health. Water, of all simple drinks, is certainly the best adapted to quench thirst, and impart a due degree of solubility to the food in the stomach. *It should be used freely at our meals, to the full extent of our desires.*

Saunders, in his book on "Mineral Waters," remarks that "Water drinkers are, in general, long lived, are less subject to decay of the faculties, have better teeth, more regular appetites, and less acrid evacuations than those who indulge in a more stimulating diluent for their common drink." But man lives and thrives when habitually using different kinds of drink, which the tastes and customs of civilized life have rendered congenial to him; and there is no necessity for restricting ourselves exclusively to water, unless other beverages are found injurious.

Water should contain as few foreign matters as possible; the difference of its varieties in this respect, according to the sources from which it is obtained, are worthy of some attention.

Rain water is very pure when collected in an open country; but in large towns it is more or less contaminated by the smoky atmosphere through which it falls, and by the impurities lodged on the roofs of the houses from which it drops. When collected from houses it is generally found impregnated with calcareous matter, and should therefore be boiled and strained before it is used.

Spring water is the best adapted for drink when *soft*; it is often

oppressive to weak stomachs. It even proves injurious to some of the domestic animals when confined to its use, and is particularly disliked by horses.

River water. River water frequently contains earthy matter in solution, which renders it unwholesome, and in the vicinity of large cities it is more or less contaminated with animal and vegetable substances, which tend still more to impair its salubrity; rest and filtration are therefore requisite before it can be used with safety.

LEAD PIPES.

Water that has stood *over night in lead pipes* of our cities may become poisonous. Persons have been poisoned by drinking *ale* that has stood long in lead pipes. It is well to let the water run a few moments in the morning before using it.

Recently pipes have been made lined with tin.

PURIFYING WATER.

Impure water may be cleansed—

1. By distillation.

Our ocean steamers now distil their water from the sea. The water thus distilled is insipid until by agitation it is made to take up a certain amount of air.

2. By boiling.

3. By filtration through sand.

GENERAL REGULATIONS FOR DIET.

Having briefly noticed the chief articles of food in common use, we shall now proceed to point out a few precautions to be attended to in regulating the diet of the invalid, with some observations on the quantity and quality of his food, the regulation of the periods at which the different meals should be taken, and the bodily and mental exercise which ought to follow them.

MEALS. According to the often repeated saying of Diogenes, the best time for eating is, “for a rich man when he can get an appetite, and for a poor man when he can get food.” But we know that habit exercises the greatest influence in regulating the appetite. Persons who are accustomed to breakfasting and dining at certain hours of the day, will always, if in health, feel inclined to eat at those hours; and in many people the desire for food, if not relieved at the usual period, goes off for a time, and indigestion is frequently the consequence. The practice of eating at certain fixed periods is strongly advocated by physicians, as essential to the maintenance of health; and regularity in this respect, besides being in accordance with the

proper regulation of domestic economy, allows the food to be entirely digested and the stomach prepared for a fresh supply, before it is charged with another meal. But the number of meals and the times at which they should be taken must depend upon the circumstances connected with each particular case, and must vary according to the age and digestive powers of the individual, the quality of the food, and the amount of exercise taken.

The habit of eating little and often is very properly condemned by all writers on dietetics. By eating frequently we disturb the healthy action of the stomach, and interfere with the natural process of digestion. The stomach follows the general law of the animal economy in requiring rest after labor, and therefore the proper quantity of food should be taken at once, in order that it may be digested, and a few hours of rest allowed before another meal. But this applies only as a general rule; for in many cases of chronic disease, and during convalescence from fever or inflammatory disorders, it would be improper to introduce much food into the stomach at one time. Under such circumstances nature requires that we should administer aliment at short intervals, in order to supply the system with sufficient nourishment without oppressing or irritating the digestive organs.

Some individuals complain of a distressing sensation of depression and languor between meals, and consequently seek relief from frequent refreshment; but this habit is always more or less hurtful, and, like many other artificial wants, requires only a little resolution to be overcome. If perseveringly discontinued for some time, the symptoms in which it originated cease, and the languid and capricious stomach is restored to its healthy tone.

The intervals between meals should not exceed six hours; although such is the power that the system has in accommodating itself to our habits, that many individuals are able to transgress this rule with impunity during many years.

LUNCHES AND DINNER AT NIGHT.

Business men in our large cities are compelled to take *their dinner at night, after the labor of the day is over.*

I do not think that this is so bad a habit as many suppose. Unquestionably the middle of the day is the best time for *dinner* for those who, like farmers, have *quiet leisure* at that time. But business men in our large cities are usually busiest from 11 to 2 o'clock. A hearty meal should not usually be taken when the mind is burdened with *pressing cares and duties.* Therefore merchants in our large cities do well to have dinner *at night*, when their brains are, or ought to be, free from *immediate* cares.

For those who dine at night, *substantial and agreeable lunches* are a *duty* and a necessity.

Merchants should give one half-hour, or better still, a full hour, to a substantial lunch, and, if possible, in pleasant company.

BREAKFAST. From the length of time that intervenes between breakfast and the previous meal, it might be presumed that a person in the morning would have a greater appetite for food, and would be able to eat more than at any other period of the day. "This, however," says Dr. Paris, "is not always the fact; the gastric juice may not be secreted in any quantity during sleep, while the muscular energies of the stomach, although invigorated by repose, are not immediately called into action; it is, therefore, advisable to allow an interval to pass before we commence the meal of breakfast." But many persons, from a weakened condition of the system, experience an uneasy sensation of languor, accompanied with a feeling of debility and depression, which unfit them for the ordinary duties of life until they have taken some food.

Breakfast, being the meal which is to support the body during the most active part of the day, should be sufficiently substantial, but no fixed rule can be given with regard to its quantity or quality. These must depend on the constitution and habits of the person, the exercise to be taken, and the time that is to elapse before luncheon. *Liquids are instinctively desired at breakfast to supply the waste by perspiration; for it has been ascertained that a healthy person, in a given space of time, perspires insensibly twice as much during the night as when awake.*

Tea and coffee are the morning beverages generally used, and the choice of these must depend on the experience of each individual of what agrees best with him. Persons affected with indigestion, and those with weak stomachs, are frequently troubled with heartburn, and other uneasy sensations, every time they take much warm fluid with bread and butter, toast, muffins, or meat, especially if fat. In such cases dry toast should be used, and an egg or two, if found to agree with the stomach, should be substituted for meat. Sometimes it is advisable to take a glass of cold water, or a cup of weak tea, on rising in the morning, and only a small cup of tea at breakfast, in order to avoid mixing much liquid with solid food, a combination which rarely agrees well with the enfeebled or delicate stomach.

Where this weakened condition of the digestive powers exists, new bread, spongy rolls, butter, and the fat of meat should be carefully avoided. The lean of cold mutton, or eggs with bread a day old, or plain toast, will probably better agree with the stomach. The adopting of these and similar dietetic measures, according to cir-

cunstances, for the purpose of aiding digestion, and restoring the healthy tone of the stomach, is certainly more rational, and more likely to prove successful, than constantly resorting to the use of medicine when the digestive organs are in a deranged condition.

DINNER. Dinner should generally be taken by invalids from four to six hours after breakfast. There can be no doubt that the stomach more easily digests a mass composed of several ingredients than an equal bulk of any one substance. This fact likewise applies to the elementary principles of which the different articles of diet are composed. If only one be taken, in whatever quantity, it affords little nourishment, and is incapable of supporting life for any length of time; whereas, when two or three are combined, the compound substance yields ample nourishment. This fact should not be lost sight of when the stomach is weak. In such cases the meals should consist of several articles; but the principle is only applicable within certain limits.

The working classes, especially in large towns, suffer neither from a variety of dishes nor from dining at late hours; but their digestion is frequently rendered laborious *by eating a full meal hastily*, and returning to their work when the process of digestion is hardly commenced. Among the less robust inhabitants of towns repose is necessary after meals; and eating slowly, in order to allow the food to be properly blended with the saliva, is another observance of no less importance.

TEA. To those who dine late, tea or coffee do not constitute a meal, and should soon follow dinner, as they are intended merely to quicken the action of the stomach, so that the food, already converted into a soft pulpy fluid (chyle), may be diluted, and thereby aided in passing into the blood, in order to be assimilated into the substance of the body.

EATING BEFORE GOING TO BED.

Every day I am asked, Is it well to eat just before going to bed?

Each person must answer this question by his own experience. As a rule, it is not, I think, a necessary habit. In England, however, the custom of "suppers," as they are called, is very common.

It is better to eat some light food before retiring, than go to bed hungry.

Some persons cannot sleep if they retire on a stomach perfectly empty. If we eat during the evening (if we are out at late parties),

it is well to select food that is most readily digestible. *Oysters are good evening food*, except where they are fried. *Very hard apples* in large quantities are not good evening food.

Eating in the evening has the effect to make some people *constipated* and sleepless. I need not say to such, *beware*.

EXERCISE BEFORE AND AFTER TAKING FOOD. We are naturally inclined to rest after eating. Active bodily exercise immediately after a meal disturbs the process of digestion. Not only do our own feelings convince us of this, but the fact has been made still more apparent by experiments performed on the lower animals. Sir Busick Harwood, having fed two hungry pointers, allowed one of them to rest in his kennel, the other he kept for two hours in constant exercise. On his return both were killed after the same lapse of time. On opening the dog which had remained quiet, the digestion was found nearly completed, but in the other the digestive process had scarcely commenced. This, however, applies only to active exertion; healthy persons may take gentle exercise after meals without suffering inconvenience; their digestion may be slightly impeded, but will certainly not be prevented. But if the stomach be weak and easily disordered, or a very full meal has been taken, repose is essential to the due performance of the digestive functions. Invalids should, therefore, amuse themselves with light reading or conversation, for an hour or two after dinner. When the digestion is completed, and the chyle has entered into the circulation, we feel invigorated and inclined to bodily exertion. This is the proper time for active exercise, which is then of as much service as at an earlier period; when the food is still on the stomach, it would be injurious. But though the benefit to be derived from exercise, either on foot or on horseback, in promoting the appetite and assisting digestion, cannot be called in question; yet the invalid should never forget that if it be carried to excess, or if he dine without having rested, the functions of digestion are very liable to be deranged.

Eating a full meal in a state of bodily fatigue tends strongly to check the digestive operations. The exhaustion of the nervous energy from long-continued *mental* exertion will also produce the same effects, nor will the stomach be capable of performing its duty if the mind be severely exercised immediately after eating. Most literary men, and persons intently devoted to business, are the greatest sufferers from indigestion; and we should always bear in mind that, when this disorder is kept up by thus deviating from the rules which nature clearly points out as essential to the maintenance of the general health, it frequently gives rise to consumption,

or at least is the first symptom of that fatal malady, as well as of many other formidable disorders.

STIMULANTS AND NARCOTICS.

The subject of stimulants and narcotics is of so great and increasing importance that it not only deserves a special chapter, but is in fact worthy of an entire volume.

It is proper and necessary that people everywhere, at least in civilized lands, should understand something of the nature of stimulants and narcotics, in order that they may know how to use them and how not to abuse them.

I may say at the outset, that by stimulants and narcotics I mean not only rum and tobacco, but every substance to which the human race have been accustomed to resort for stimulating and narcotizing effects.

There are as many different kinds of stimulants and narcotics as there are different races and tribes and families of men on the face of the earth.

The following list and explanations, though incomplete, will give some idea of the varieties that are now used in different parts of the world. It will be seen that many of these substances are not known here, even by name.

Fermented and distilled liquors.—Rum, gin, brandy, whiskey, champagne, sweet and sour wines, cider and beer—all contain alcohol, in greater or less quantities. They are used in all civilized and many of the semi-civilized lands, among about 500,000,000 people. In the United States and Great Britain the stronger liquors are used; in France, Germany, Spain, and Italy, the lighter wines.

From Sheen's little treatise I extract the following interesting facts with reference to alcoholic liquors:

"The vine is said to have been introduced into England by the Romans, and vineyards are mentioned in the earliest Saxon charters, as well as gardens and orchards.

"Bede, writing in 731, alluded to vineyards being in existence at that time. Domesday Book also speaks of vineyards in several counties. William of Malmesbury, in his work 'De Pontificibus,' written in 1123, informs us that the vale of Gloucester used to produce as good wine as many of the provinces of France. From the date of the Conquest vineyards appear to have been attached to all the abbeys and monastic institutions in the southern and western

parts of the island. But about the time of the Reformation, when the ecclesiastical gardens were either neglected or destroyed, ale, which had been known in England for many centuries, seems to have superseded the use of wine as a general beverage.

"We have no historical record of the period when the distillation of spirits was first known. The Greeks and the Romans were ignorant of ardent spirits, and, from the absence of any evidence to the contrary, we must assume that the art of distilling was not known until long afterwards.

"The use of the still appears to have been well known in the time of Geber, who lived in the seventh century, and who describes very accurately the process of distillation by the alembics—*per descensorio uno et filtratio*—in his work entitled 'Liber Investigationis Magisterii.' It has been stated that Albucasis, who is supposed to have lived in the twelfth century, taught the method of procuring spirit from wine; but as the process of distillation was evidently known long before his time, it is equally certain that his predecessors had submitted fermented liquors to this operation. Arnald de Villeneuve, a physician of the thirteenth century, is the first author who speaks explicitly of an intoxicating spirit obtained by the distillation of wine, and he considers it to be the universal *panacea*, so long sought after in vain. His disciple, Raymond Lully, was acquainted with spirit of wine (which he called *aqua ardens*), as well as of the mode of depriving it of water by means of some alkali.

"Morewood considers the Chinese to have been acquainted with this process long before the rest of Asia, Africa, and Europe. In his 'Essay on Intoxicating Liquors,' page 107, he says: 'In China, a country which has preserved its civil polity for so many thousand years, the art of distillation was known far beyond the date of any of its authentic records. The period of its introduction into that country, in common with the rise and progress of other chemical arts, is, however, concealed amidst the darkness of ages. But, taking dates as we find them sanctioned by respectable authority, and leaving the assumed antiquity of the nation as a point for the discussion of chronologists, we are certainly led to attribute to the people of this empire the merit of an invention which seems to have eluded the grasp of the human intellect in the rest of Asia, Africa, and Europe, until a more advanced period in the history of the world.'

"The preparation of alcohol may be divided into three stages—the production of a fermented vinous liquor, the preparation from this of an ardent spirit by distillation, and, lastly, rectification or purification. When vegetable substances are placed in contact with

air and moisture they undergo that kind of decomposition which is denominated *fermentation*. The products of this process vary at different periods or stages, and on this depends the distinction into kinds or varieties of fermentations. Thus starchy liquids, under some circumstances, become saccharine, the process being termed the *saccharine* fermentation. Sugar, dissolved in water and mixed with nitrogenous matter, is converted into carbonic acid and alcohol, and to this process the name of vinous fermentation is applied. Under some circumstances mannite, lactic acid, and a syrupy mucilage are formed by the action of the nitrogenous or albuminous principles of vegetable juices on the sugar. This change has been denominated the *viscous* or *mucilaginous* fermentation. Vinous liquids are capable of generating acetic acid, and the process is called *acetous* fermentation. Lastly, most vegetable substances are slowly converted into gases, and a substance called vegetable mould, constituting the process termed the *putrefactive* fermentation. The liquid obtained by the vinous fermentation has received different names, according to the substance from which it is obtained.

“When procured from the fresh juices of fruits, as grapes, currants, gooseberries, &c., it is denominated *wine*; from a decoction of malt and hops, *ale* or *beer*; from the expressed juice of apples, *cider*; that of pears, *perry*; and from a mixture of honey and water, *mead*. Fermented infusions of barley (raw grain and malt prepared by distillers for the production of ardent spirits) are technically termed *washes*.

“*Brewing* consists in the process of extracting a saccharine solution from grain, and in converting that solution into a fermented and sound spirituous beverage called beer or ale. This art, although a perfectly chemical one in nearly all its stages, had not until comparatively lately been indebted to chemistry for any of the improvements which have been made in its details. This we may attribute to the rare occurrence in former days of a practical chemist being engaged in the operation of brewing. However, we find that within the last few years very great additions have been made to our knowledge of this art—particularly in our being acquainted with that principle by means of which the conversion of starch into sugar whilst in the mash-tun is brought about. Various other improvements affecting the mode and appliances as well as the principles of the art of brewing have also been adopted by many of our leading firms, which contribute largely to facilitate their means of production and supply.

“The process usually followed by the brewer may be divided into eight distinct parts independent of malting, namely: first, the

grinding of the malt; secondly, the operation of mashing; thirdly, the boiling; fourthly, the cooling; fifthly, the fermentation; sixthly, the cleansing; seventhly, the racking or vatting; and, eighthly, the fining or clearing. In brewing the various beers, or ale, porter, and stout, three distinct sorts of malt are employed—the pale or amber malt, the brown malt, and the roasted or black malt.

“The first of these alone is used for ales; indeed, for the article so extensively known as pale bitter ale, very light-colored malt only is applicable. The brown malt is the article in general use for giving the flavor to beer, and the roasted malt is chiefly used with the latter sort in imparting the requisite color to porter and stout.”

Tobacco.—This is used in the form of smoking, chewing, or snuff-taking more universally than any other stimulant or narcotic—among the civilized, the semi-civilized, and the barbarians—probably among 900,000,000 of the human race.

It is estimated that *four billion pounds* of tobacco are raised annually throughout the world, which is nearly four pounds a year for every man, woman, and child on the face of the earth. Six millions of acres of land are devoted to its cultivation. The history of tobacco is now pretty well known. It is supposed to be indigenous to tropical America. Certainly it was not used in Europe until it was brought there after the discovery of America.

Tobacco received its name from the fact that the plant was first recognized by a Spanish monk in Tabaca, a province of St. Domingo. How long it had been used by the Indians prior to the discovery of America it is impossible to ascertain. Doubtful legends say that the plant was known in Asia many centuries ago, but that it was never smoked or chewed, as at the present day. In 1560 it was reported to the court of Portugal by Nicot, the ambassador of the French, and was introduced from Virginia into England.

It was popularized by the example and influence of Sir Walter Raleigh, and by the close of the sixteenth century it had become quite well known throughout England. Since that time it has extended over a large part of the globe. It was introduced into Turkey and Arabia in the early part of the seventeenth century.

Says Johnston: “In Turkey the pipe is perpetually in the mouth. In India, all classes and both sexes smoke. The Siamese chew moderately, but smoke perpetually. The Burmese, of all ranks, of both sexes, and of all ages, down even to infants of three years old, smoke cigars.”

In China the practice is so universal that every female, from the age of eight or nine, wears, as an appendage to her dress, a small silken pocket, to hold tobacco and a pipe.

There is reason for believing that the Chinese knew of tobacco, as they knew of almost everything else, long before the discovery of America.

Opium.—This is used habitually among 400,000,000 inhabitants of the East, just as we use tobacco here. It is estimated that it is indulged in by about 100,000 in the United States. It is certainly used among us much more than formerly. It is, as all know, the juice of the poppy.

Hemp and Haschisch.—These are used in Turkey, India, Persia, Africa, and Brazil, by two or three hundred millions of people.

Hemp appears to have been used in the days of Homer, Herodotus, and Diodorus Siculus. It is raised chiefly in India, Persia, and Arabia. The hemp is a resinous exudation from the plant. It is also raised in Africa and Brazil.

In the plains of India it is consumed in every form, and on the slopes of the Himalayas it is cultivated for smoking as high up as the valleys of Sikkim. In Persia, in the east of Europe, and in Mahomedan countries it is in extensive use. In Northern Africa it is largely employed by the Moors. In central and tropical Africa it is almost everywhere known as a powerful medicine and a desired indulgence. In Southern Africa the Hottentots use it, under the name of dasha, for purposes of intoxication; and when the Bushmen were in London they smoked the dried plant in short pipes, made of the tusks or teeth of animals. And what is astonishing, when we consider the broad seas which intervene, even the native Indians of Brazil know its value, and delight in its use; so that over the hotter parts of the globe generally, wherever the plant develops in abundance its peculiar narcotic principle, its virtues may be said to be known, and more or less extensively made use of.

Effects of Hemp on the System.—"This wide use of the plant implies that the effect of hemp upon the system is generally very agreeable. In India it is spoken of as the increaser of pleasure, the exciter of desire, the cementer of friendship, the laughter-mover, and the causer of the reeling gait—all epithets indicative of its peculiar effects."—*Johnston*.

The effect of hemp, or of *haschisch*, which is prepared from hemp, by boiling the leaves and flowers with water and butter, adding cloves, nutmegs, mace, &c., is said to be very delightful. It obliterates ideas of time, and creates a kind of temporary heaven. These effects, however, vary in different individuals. The word "*assassin*" is said to be derived from the fact, that some individuals under the influence of *haschisch* are inclined to rave furiously, to

threaten, and even to murder. These terrible effects are observed among the Orientals more than among the inhabitants of our own land.

On some persons it causes the most intense anguish for several hours, a sort of double consciousness, and symptoms somewhat similar to the hallucinations of *delirium tremens*.

Coffee.—This familiar drink is used to the extent of about 1,000,000,000 pounds annually.* Like most of our popular stimulants and narcotics, it has come into use chiefly within the past two or three centuries. Like many of the other stimulants and narcotics, it was introduced amid great opposition. Like other stimulants and narcotics also, it has triumphed over all its enemies, and is now used in the best portion of the globe.

“*Arabian Coffee*.—The tree which produces this seed is said to be indigenous to the countries of Enárea and Caffa, in Southern Abyssinia. In these districts the coffee-tree grows like a wild weed over the rocky surface of the country. The roasted seed or bean has also been in use as a beverage in Abyssinia generally from time immemorial, and is at the present day extensively cultivated in that country. In Persia it is known to have been in use as early as the year 875. From Abyssinia it was introduced into Arabia in the beginning of the fifteenth century, when it partly superseded the older chaat, or Abyssinian tea. About the middle of the sixteenth century it began to be used in Constantinople, and in spite of the violent opposition of the priests, became an article of general consumption. In the middle of the seventeenth century (1652), the first coffee-house was opened in London by a Greek named Pasqua; and twenty years after the first was established in Marseilles.”—*Johnston*.

The use of coffee was unknown to the Greeks and Romans, and does not appear to have been known in the Asiatic countries as late as the time of the Crusades in the thirteenth century, although its first introduction into Europe was from Arabia. It seems to have been earliest in use in Ethiopia, where it has been drunk by the natives for a great length of time. Mr. Bruce, in his Travels in Abyssinia, states that the Gallæ, a wandering nation of Africa, in their incursions on Abyssinia, being obliged to traverse immense deserts, and wishing to be encumbered with as little baggage as possible, take with them a mixture of coffee and butter rolled up into balls, and carried in a leathern bag. One of these, about the size of a billiard ball, keeps them, they say, in strength and spirits during a day's fatigue.

* Two hundred millions of pounds are imported to the United States alone.

"Coffee was introduced into Mecca, Medina, and Cairo about the middle of the fifteenth century, and two coffee-houses were opened at Constantinople in 1554. Both at Cairo and in Turkey it had to encounter political and religious opposition. The dervises affirmed that roasted coffee was nothing but a coal, and that the eating of coals was forbidden by the laws of their prophet. So that the coffee-houses were obliged to be shut up until 'a more sensible mufti' succeeded in convincing the people that roasted coffee was not a coal; upon which they were again opened. In later years the use of coffee became extremely prevalent throughout the East. Houses for selling it were established in all parts of the Turkish empire: it was introduced into private families, and the refusal of a husband to supply his wife with coffee was reckoned among the legal causes of a divorce. In Europe coffee was introduced into France and England about a century and a half ago. So rapid was the progress of a taste for it after it became known, that in eight years from its introduction it had become in England a subject of public revenue."—*Bigelow*.

Other Coffees.—"Besides the real *Coffea Arabica*, other species of the coffee-plant are grown in various countries, and yield a useful marketable bean. Thus, in Silhet and Nepal the *C. Beauhalensis* is cultivated; on the coast of Mozambique, the *C. Mozambicana*; on the coast of Zanguebar, the *C. Zanguebaria*; and in the Mauritius, the *C. Mauritiana*. The seed of the last of these tastes disagreeably sharp and bitter, and sometimes causes vomiting, yet it is in some places cultivated instead of the *Coffea Arabica*. It is possible that these so-called different species may, like the varieties of the tea-plant, be only differently modified forms of the same original species."—*Johnston*.

Very many substitutes are used for coffee. One of the best known of these is *chicory*. It is largely used to adulterate coffee; in moderate quantities is not harmless, but when used to any great extent is decidedly injurious.

"It is a native weed, which, with its large pale-blue flowers, is seen scattered about in numerous places. It has a large white parsnip-like tap-root, which increases in size when the plant is subjected to cultivation. This root abounds in a bitter juice, which has led to its use as a substitute for coffee. The plant is now extensively cultivated for the sake of its root."—*Johnston*.

Chicory itself is often adulterated. It is almost as hard to find it pure in the shops, as it is to find pure coffee itself. According to Johnston, *Venetian red* is much used to color *chicory*. Nor is this all; Venetian red is itself adulterated. The manufacturer

grinds up his color with *brick-dust*, in order to be able to sell it cheaper and to give it a variety of *colors*.

Tea.—Of the different varieties of tea there are raised annually about 3,000,000,000 *pounds*. It is estimated that three millions of acres of land are devoted to the culture of tea. It is more used than any other form of beverage, except water. It is a product of temperate climes, and seems to be adapted for all countries. It is certainly used among more than half of the human race. Its cultivation, transportation, and sale give employment to millions of men and billions of capital. In New York City alone there are a number of large firms whose yearly transactions in the article of tea are fabulous. Much as it is used in this country and in England, it is used still more freely in China and Russia, where it is drunk several times daily.

Like coffee, tea was not introduced into Europe until the seventeenth century. It is stated that it did not come into general use in China until the year 600, and was introduced into Japan in 810.

The tea-plant is a small evergreen tree or shrub, of the height of six or eight feet. It grows in the valleys, and on the sloping sides of mountains with a southern exposure. In Japan it is planted around the borders of fields, without regard to the kind of soil; while in China, where it is an important article of commerce, whole fields are covered with it, and cultivated with the greatest care.

The origin of the employment of tea as a beverage amongst the Chinese is wrapped in the obscurity which generally belongs to ancient usages; and a fabulous tale is narrated as to its introduction among inhabitants of the empire, whilst, as is usual with fables, it has been imagined to have some allegorical allusion, which, if explained, would satisfy the lover of antiquarian lore. The tale is thus related by one of the compilers of a history of China:

“Darma, a very religious prince, and third son of an Indian king named Kosjusvo, is said to have landed in China in the year 510 of the Christian era. He employed all his care and thought to diffuse throughout the country a knowledge of God and religion; and, being desirous to excite men by his example, imposed on himself privations and mortifications of every kind, living in the open air, and devoting the days and nights to prayer and contemplation. After several years, however, being worn out with fatigue, he fell asleep against his will; and, that he might faithfully observe his oath, which he thought he had violated, he cut off his eyelids and threw them on the ground. Next day, having returned to the same spot, he found them changed into a shrub which had never before been produced. Having eaten some of the leaves of it, he found

his spirits exhilarated and his former vigor restored. He recommended this aliment to his disciples and followers. The reputation of tea increased, and after that time it continued to be generally used. Kampf, in his '*Amœnitates Exoticæ*,' gives the life with a portrait of this saint, so celebrated in China and Japan. There is seen at the feet of Darma a reed, which indicates that he had traversed the seas and rivers."—*Sigmond on Tea*, p. 12.

Nicolans Fulpius was about the first medical man who wrote professionally upon tea; but his were not original observations: they were the opinions of the most eminent men which he had collected to give to the world. But in 1678 appeared the first edition of a book, which speedily ran through three large impressions, and had a considerable influence upon the introduction of tea. It was entitled "*Cornelio Bontèkoe, Tractaat van het excellenste Kruid Thee*." Although this work was, from the extravagance of its commendations on tea, severely handled by some of the critics, it was translated into many languages, and quoted as the highest authority. He pronounced tea to be the infallible cause of health, and that if mankind could be induced to drink a sufficient quantity of it, the innumerable ills to which man is subject would not only be diminished, but entirely unknown. He thinks that *two hundred cups* daily would not be too much. He is said to have been rewarded for his judgment by the liberality of the Dutch East India Company. Heydentrick Overcamp, who wrote the life of Bontekoe, states that his inducement to write was to recommend himself to his fellow-citizens, and to defend himself against his colleagues, who did not follow his theory or his practice. Etzmüller recommended tea as a fine stomachic, cephalic, and anti-nephritic. Peechline wrote a dialogue on tea, which he entitled "*Theophilus Bibaoulus*," and several poets indulged themselves in its praise. Petit wrote a poem; Peter Francius, two anacreontics; Heinrich, a Doric Melydrion; and our poet-laureate, Tate, joined the melodious bards. Whilst it met with so much approbation there were, likewise, those who were not equally satisfied with its merits. Boerhaave, Van Swieten, and others attempted to stem the tide that was setting in its favor: but they have proved themselves incapable of resisting the general impression, for no beverage that has ever yet been introduced sits so agreeably on the stomach, so refreshes the system, soothes nervous irritation after fatigue, or forms a more grateful repast. It contributes to the sobriety of a nation; it imparts all the charms to society which spring from the enjoyment of conversation, without that excitement which follows upon a fermented drink.

The introduction of tea-drinking into England has been ascribed

to Lord Arlington and Lord Orrery, and the year 1666 (the *annus mirabilis* of Dryden) has been assigned as the exact date; but in the diary of Mr. Pepys, Secretary to the Admiralty, the following is registered: "I sent for a cup of tea, a Chinese drink, of which I had never drunk before." In the diary of Henry, Earl of Clarendon, there is a memorandum: "Père Couplet supped with me, and after supper we had tea, which he said was really as good as any he drank in China." The first historical record, however, is an act of Parliament, passed in the year 1660, 12 Carl II. c. 23, which enacts that a duty should be laid of eight pence per gallon on all tea made and sold in coffee-houses; which were visited twice daily by officers, whose duty it was to ascertain what quantity had been made.

Very much has been said and written of the difference between green tea and black tea. The common impression is, that green tea is always poisoned more or less in the preparation. This impression is only partly true. Undoubtedly drugs are sometimes used to color the teas; but in China, in the tea-growing regions, the two varieties are made by difference in the manner of preparation.

Johnston thus describes the processes:

"First, That in the process of drying the leaves are roasted and scorched in such a way as necessarily to bring about many chemical changes within the substance of the leaves themselves. The result of these changes is to produce the varied flavor, odors, and tastes by which different varieties of tea are more or less distinguished.

"Second, That the treatment or mode of handling by which the leaves are converted respectively into green and black teas, is the cause of the different colors of these two main varieties.

"It is by lengthened exposure to the air, therefore, in the process of drying, accompanied, perhaps, by a slight heating and fermentation, that the dark color and distinguishing flavor are given to the black teas of commerce. The oxygen of the atmosphere acts rapidly upon the juices of the leaf during this exposure, and changes chemically the peculiar substances they contain, so as to impart to the entire leaf the dark hue it finally acquires. The precise nature, however, of these changes has not, as yet, been chemically investigated."

"*Maté, or Paraguay tea*, though not used over so large an area as the Chinese tea, is as much the passion of the Brazilians and their neighbors in Southern America, as the latter is of the nations of north-eastern Asia. It is prepared from the dried leaves of Brazilian holly, is said to have been in use among

the Indians from time immemorial; has been drunk by all classes in Paraguay since the beginning of the seventeenth century, and is now consumed by 'almost the whole population of South America.' The leaf of this tree is four or five inches long, and after being dried it is rubbed to powder before it is infused. The dried leaf has much of the aroma of some varieties of Chinese tea, and the infusion has a pleasant odor, and an agreeable bitter taste. In the state in which it is commonly used in South America, it is more exciting than China tea, producing a kind of intoxication, and by excessive use leading even to *delirium tremens*."—*Johnston*.

"Some writers have asserted that the tea is roasted upon plates of copper, and that its color is owing to verdigris, with which it thus becomes impregnated. But those travellers who are most entitled to credit affirm that the plates are, without exception, of iron, and Dr. Lettson, after a great number of experiments made with chemical tests, never detected any trace of copper; so that this suspicion appears to be void of foundation."—*Bigelow*.

This Maté is very largely used in the whole of South America. In many respects it is very similar to the tea of China, though much inferior. It acts, however, upon the kidneys and bowels.

A great many substitutes have been used for tea. Johnston gives the names of *twenty-four* of these, and states that many more might be mentioned.

"*Abyssinian Tea*, called in its native country Khat or Chaat, is very extensively cultivated in Shoa and the adjoining regions, and is in general use among the inhabitants, just as tea is in China. It consists of the dried leaves of a species of small tree from which the poorer classes of Chinese prepare an inferior kind of tea. In a light gravelly soil the plant attains a height of twelve feet. The leaves are plucked in the dry season, and well dried in the sun. They are either chewed, boiled in milk, or infused in boiling water, and, by the addition of honey, yield a pleasant beverage. They have much resemblance to Chinese tea, both in their qualities and their effects. They are bitter to the taste, possess exhilarating properties, and dispel sleep if used to excess.

"The leaves of this plant are also used green. Forskäll states that the Arabs eat them green because of their property of preventing sleep. To such a degree do they exhibit this influence, that a man who chews them may stand sentry all night without feeling drowsiness. They are also regarded as an antidote to the plague; and the Arabs believe that the plague cannot appear in places where the tree is cultivated. Botta adds to these qualities that, when fresh, the leaves are very intoxicating."—*Johnston*.

Cocoa.—The different varieties of cocoa are used to the extent of 100,000,000 of pounds annually. It is prepared from seeds. It is sold in the shops in *three* different and familiar forms:—

1. *Rock-cocoa of the stores*.—This is made by roasting the whole cocoa bean, beating it into a paste, and then mixing it with sugar, starch, &c.

2. *Cocoa nibs*.—These are prepared by depriving the bean of the husk and then crushing it. This is the purest form of cocoa.

3. *Chocolate paste*.—This is prepared by shelling the bean, grinding it into a paste, and then mixing it with sugar, cinnamon, vanilla, &c.

There are several varieties of cocoa—the Mexican, Brazilian, and one or two substitutes.

“The Mexican cocoa is the seed of the *Theobroma cacao* (fig. 35). This is a small but beautiful tree, with bright dark green leaves, which is a native of the West Indies and of the central regions of America. It grows spontaneously in Mexico and on the coast of Caraccas, and forms whole forests in Demerara.

“When the Spaniards first established themselves in Mexico, they found a beverage prepared from this seed in common use among the native inhabitants. It was known by the Mexican name of *chocolatl*, and was said to have been in use from time immemorial. It was brought thence to Europe by the Spaniards in 1520, and has since been introduced more or less extensively as a beverage into every civilized country. Linnæus was so fond of it that he gave to the tree the generic name of *Theobroma*—‘Food of the Gods.’”—*Johnston*.

Lettuce.—This is a kind of substitute for opium. The juice of the plant somewhat resembles opium. Every one who has eaten lettuce for dinner knows that it will produce drowsiness.

“If the stem of the common lettuce, when it is coming into flower, be wounded with a knife, a milky juice exudes. In the open air this juice gradually assumes a brown colour, and dries into a friable mass. The smell of this dried juice is strongly narcotic, recalling that of opium. It has a slightly pungent taste, but, like opium, leaves a permanent bitter in the mouth. It acts upon the brain after the manner of opium, and induces sleep.

“To this crude extract the name of *Lactucarium* has been given. Like opium, it dissolves in water to the extent of about one-half, and in this soluble portion the narcotic virtue resides. The principal active ingredient is supposed to be a peculiar substance named *lactucarium*, of which the crude contains about one-fourth of

its weight. It contains other active ingredients, however, the chemical nature and physiological influence of which have not as yet been rigorously investigated.”—*Johnston*.

“Lactucarium is one of those narcotics in which many of us unconsciously indulge. The eater of green lettuce as a salad takes a portion of it in the juice of the leaves he swallows; and many of my readers, after this is pointed out to them, will discover that their heads are not unaffected after indulging copiously in a lettuce salad. Eaten at night, the lettuce causes sleep; eaten during the day, it soothes and calms, and allays the tendency to nervous irritability. And yet the lover of lettuce would take it very much amiss if he were told that he ate his green leaves, partly at least, for the same reason as the Turk or Chinaman takes his whiff from the tiny opium pipe; that, in short, he was little better than an opium eater, and his purveyor than the opium-smugglers on the coast of China.”—*Johnston*.

Other substitutes for opium are:

Syrian Rye.—It is used by the Turks.

Bulls' Hoof.—This is used in Jamaica, and has been called the “*Dutchman's laudanum*.”—*Brown*, quoted by *Johnston*.

“*The Hop*, which may now be called the English narcotic, was introduced into this country at a comparatively recent period. It may have been employed in Germany in the times of the Roman writers, but was probably unknown to them. Its use, as an addition to malt liquor, appears to be of German origin. Hop gardens, by the name of *Humulariæ*, are spoken of in documents of the early part of the ninth century, frequently in those of the thirteenth century. In the breweries of the Netherlands, the hop seems to have been introduced about the beginning of the fourteenth century. From the Low Countries, or, as some say, from Artois, which borders upon them, it was brought to England in the reign of Henry VIII., some time after his expedition against Tournay, and about the year 1524. In the twenty-second year of his reign (1530), that monarch, in an order respecting the servants of his household, forbade sulphur and hops to be used by the brewers. Three-quarters of a century later (1603), the introduction of spoilt and adulterated hops was forbidden by James I., under severe penalties. This appears to show that, though considerable attention is known to have been already given to the cultivation of the hop in England, a large part of the hops supplied to the home market was still brought from abroad.”—*Johnston*.

Hop is chiefly used in the manufacture of *beer*.

It gives to beer an agreeable bitter taste.

It directly affects the *brain* and nervous system by virtue of its narcotic properties. The well-known soporific effects of beer are caused by the hop used in its manufacture.

Hop also keeps beer from souring, by arresting fermentation.

There are a number of varieties of the hop, which differ very widely in quality.

Hop pillows were once prescribed to King George III. of England, as a remedy for sleeplessness, and since that time they have continued to be used for that purpose.

Whatever effect comes from the hop pillow must be due to the escape of the volatile narcotic principles in exceedingly small quantities.

Coca is a narcotic that is used among 10,000,000 of the human race, chiefly among the South American Indians. It must not be confounded with the beverage *cocoa*.

"It is not less interesting than the narcotics of the East, either in its social or in its physiological relations. It is little known in Europe, its use as an indulgence being in a great measure confined to the native Indians of Bolivia and Peru.

"The *Erythroxylon coca* is a bush which attains the height of six or eight feet, and resembles the black thorn in its small white flowers and bright green leaves. It is a native of the tropical valleys which occur on the eastern slope of the Andes in Bolivia and Peru, and it still grows wild in many parts of these countries."—*Johnston*.

"*Consumption of Coca Leaf*.—We have no accurate data from which to form an estimate of the actual weight of coca leaf collected and consumed in Bolivia and Peru. Pöppig estimates the money value of the yearly produce to be about four and a half millions of Prussian dollars, which, at 1s. a pound, the price it yields to the grower, would make the annual produce nearly 15,000,000 lbs. The approximation is sufficient to show us its importance to the higher regions of South America, in an agricultural and commercial, as well as in a social point of view."

"When we consider that eastward from Bolivia and Peru the culture and use of coca have extended into parts of Brazil and to the banks of the Amazon, it will not appear exaggerated if we estimate the actual growth and consumption of the dried coca leaf at 30,000,000 lbs. a year. At 1s. a pound, this is worth a million and a half sterling; and at the average produce of 800 lbs. an acre, it implies the use of 37,000 acres of good and carefully cultivated land for the growth of this plant. We may estimate also that the chewing of coca is more or less indulged in among about ten millions of the human race."—*Johnston*.

By the Peruvian Indians *coca* is both smoked and chewed. The leaves, dried in the sun, are the portions of the plant which are used. Of these the Indian will consume daily an ounce, or an ounce and a half.

Its effects at first are pleasant and mild. When used to excess it begets a kind of insanity. In South America, an Indian who becomes a great slave to the use of the *coca* is called a *coquero*—a term meaning the same as our *drunkard*.

The Betel Nut.—This is a narcotic which, though hardly known by name in this country, is yet used among 100,000,000 of the human family.

It is the seed of one of the species of palm. It is cultivated in India, Malabar, Ceylon. It is chewed like tobacco. It is to the Eastern Islands what the *coca* is to South America. Those who use it become most extravagantly fond of it. Like tobacco and opium, it makes them unwilling slaves. When used in moderation its effects are agreeable and exhilarating. Among the wretched poor of India it is an actual substitute for food. Millions of the natives of India would rather be denied their regular meals than their *betel nut*.

“The visible effects of the betel are, that it promotes the flow of the saliva, and lessens the perspiration from the skin. It tinges the saliva red, so that when spit out it falls on the earth like blood. It gives a red color to the mouth, teeth, and lips, which, though at first sight disgusting to Europeans, is by the natives considered ornamental. It imparts also an agreeable odor to the breath, and is supposed to fasten the teeth, cleanse the gums, and cool the mouth. The juice is usually, but not always, swallowed.”

“We have no means of estimating the absolute quantity of this nut which is consumed yearly by the Asiatic nations, but it must be very great. It is chewed by probably not less than fifty millions of men! If we allow to each chewer ten pounds weight a year, which is less than half an ounce a day, this would give the enormous consumption of five hundred millions of pounds weight every year! Only tobacco, among the narcotics in common use, is used in larger quantity than this. The small quantity of the betel-nut imported into this country is converted into charcoal for tooth-powder, probably from some imaginary idea that it is superior for this purpose to other kinds of charcoal.”—*Johnston*.

2. *Chica, or Maize Beer.*—The use of malt beer in Germany, and probably also in England, is very ancient, and that of *chica* or *maize* beer in South America appears to be equally remote. It was a common drink of the Indians long before the Spanish conquest.

The usual way of preparing *chica* is to water or moisten Indian corn, as the English maltster does his barley—to leave it till it sprouts sufficiently, and then to dry it in the sun. It is now maize malt. This malt is crushed, mashed in warm water, and then allowed to stand till fermentation takes place. The liquor is of a dark yellow color, and has an agreeable, slightly bitter, acid taste. It is in universal demand throughout the west coast of South America, and is consumed in vast quantities by the mountain Indians. Scarcely a single hut in the interior is without its jar of the favorite liquor.

In the valley of the Sierra, however, the most highly prized *chica* is made in a somewhat different manner. "All the members of the family, including such strangers as choose to assist in the operation, seat themselves on the floor in a circle, in the centre of which is a large calabash, surrounded by a heap of dried maize (malt). Each person takes up a handful of the grain and thoroughly chews it. This is deposited in the calabash, and another handful is immediately subjected to the same process, the jaws of the company being kept continually busy until the whole heap of corn is reduced to a mass of pulp. This, with some minor ingredients, is mashed in hot water, and the liquid poured into jars, where it is left to ferment. In a short time it is ready for use. Occasionally, however, the jars are buried in the ground, and allowed to remain there until the liquor acquires, from age, a considerable strength, and powerful intoxicating qualities.

"*Chica* thus prepared is called *chica mascada*, or chewed *chica*, and is considered far superior to that prepared from maize crushed in the usual manner. The Serrano believes he cannot offer his guest a greater luxury than a draught of old *chica mascada*, the ingredients of which have been ground between his own teeth."—*Johnston*.

This method of making beer seems hideous enough. But the explanation of the process is quite interesting. The saliva changes the starch into sugar. This sugar afterwards ferments and makes beer.

According to *Von Tschudi*, *chica* can be made from grapes, pineapples, rice, barley, peas, barley, and bread.

"*Palm Wine, or Toddy*.—The sap of many palm-trees is rich in sugar. In some countries this is extracted by boiling down the collected juice, as cane sugar is extracted from the expressed juice of the sugar-cane. In other countries the juice is allowed to ferment, which it does spontaneously, and in hot climates within a very short period of time. This fermentation converts the alcohol and juice which contains it into an intoxicating liquor.

"In the islands of the Indian Archipelago and the Philippines an intoxicating liquor is prepared in this way from the sap of the gomuti palm. It is called *neva* in Sumatra, and the Batavian arrack is distilled from it. The cocoa palm produces the palm wine known in India and the Pacific by the name of toddy."—*Johnston*.

One tree yields from two to six pints of sap or "*toddy*." After standing a few hours it ferments. When this fermented juice is distilled it makes a powerful brandy. It is said that the palm wine is used by a larger number of the human race than the wine of the grape.

It is used in Chili, South America, in India, and throughout Africa.

The taste of the best qualities is said to be very agreeable, closely resembling champagne.

Sugar-cane Wine, or Guarapo.—This is the fermented sap of the sugar-cane. It receives its name from the fact that it is largely used among the natives of Guarapo.

"*Bouza, murma, or millet beer*, is a favorite drink of the Crim Tartars. They prepare it from fermented millet-seed, to which they add certain admixtures which render it excessively astringent. They call it *bouza*."—*Oliphant*.

"The *Arabians, Abyssinians*, and many *African* tribes give the same name to a fermented drink which they usually prepare from the seeds of the *Poa Abyssinica*. They occasionally employ millet-seed, however, and even barley, for the purpose. Their *bouza* is described as a sour, thick drink."—*Johnston*.

This drink is much like our ordinary malt liquors. It is sometimes sucked through a tube, as boys suck cider through a straw.

According to Hooker it is very weak, but in a hot day's march is a very grateful beverage. It is drunk while warm, like our tea and coffee.

"*Quass or rye beer*, a favorite Russian drink, is a sharp, acid, often muddy liquor, which, in taste and appearance, resembles some of the varieties of *bouza*. It is made by mixing rye-flour, and occasionally barley-flour, with water fermenting. It may possibly contain lactic acid, but I am not aware that its composition has yet been made the subject of special chemical inquiry.

"This is one of the cases in which unmalted grain is employed in the manufacture of beer on the continent of Europe.

"*Koumiss, or milk beer*.—Milk, as I have explained in the preceding chapter, contains a peculiar kind of sugar, less sweet than cane sugar, to which the name of milk sugar is given. This sugar, when

dissolved in water, does not ferment upon the addition of yeast; but when dissolved in the milk along with the curd and butter, it readily ferments, is transformed into alcohol and carbonic acid, and gives to the liquor an intoxicating quality. This fermentation will take place spontaneously, but it is hastened by the addition of yeast or of a little already fermented milk. The fermented liquid is the *koumiss* of the Tartars. Mare's milk is richer in sugar than that of the cow, and is usually employed for the manufacture of milk beer."—*Johnston*.

Brandy can be obtained from the *koumiss* by distillation. The natives call this milk-brandy *arraca*. In the north of Scotland and in Ireland buttermilk is kept until it undergoes a vinous fermentation.

Ava.—This liquor is used in the South Sea Islands, in the Tonga, Feejee, and Samoan Islands; in short, throughout the Pacific Ocean. It is prepared in very much the same way as the *chica* or *maize beer*.

It is a very interesting and suggestive fact that this method of preparing fermented drink—chewing the *ava* and the *chica*—should exist in regions so far apart as South America and the islands of the Pacific.

The process of making the *ava* and its effects are thus described by *Johnston*:

"The name of *ava* is given to the root of the intoxicating long-pepper (*Macropiper methysticum*), which is chewed, either in the fresh or in the dried state, as the Indian chews his maize. The pulp is then mixed with cold water, which after a brief interval is strained from the chewed fibre, and is ready for use. The taste, to one unaccustomed to it, is not pleasant. It reminded Captain Wilkes of the taste of rhubarb and magnesia! According to the white persons who have tried it, this infusion does not intoxicate in the same manner as ardent spirits. It more resembles opium in some of its effects; producing a kind of temporary paralysis, tremors, indistinctness and distortion of vision, and a confused feeling about the head."

Cocculus Indicus is chiefly known as a means of adulterating beer and other drinks. It is very bitter, has a rich taste, and directly affects the brain, and thus produces intoxication.

It is very powerfully poisonous when used in quantity. The poorer classes like to have their liquor drugged with it, because they can "*feel it*." It takes a less quantity of liquor that has been drugged with *cocculus indicus* to affect one than of pure liquor.

"It is the fruit or berry of the *Anamirta cocculus*, a beautiful

climbing-plant, which is a native of the Malabar coast and of the Indian Archipelago. It is sometimes called the Levant nut, or the *Bacca orientalis*. It has some resemblance to the bayberry, and in 1850 was imported into this country (England) to the extent of 2,359 bags, of one hundredweight each."—*Johnston*.

There is no doubt that it is slowly injurious to the system even in moderate doses, and it should be regarded as a crime to adulterate liquors with it. Very much of the intemperance among the lower and degraded classes is caused by the *cocculus indicus* in the liquor which they drink.

A person who has been made drunk by it feels worse after the debauch than one who has been made drunk simply on pure alcoholic liquors.

Sweet Gale.—This narcotic is not known in this country, but is used in Sweden. It is said to be used largely for the purpose of imparting bitterness to beer.

Emetic Holly.—This narcotic is used by the Indians of Florida. The infusion of the leaves is called the "black drink," and, according to Johnston, is drunk largely by the chiefs when about to be engaged in important deliberations.

Siberian Fungus—a kind of toad-stool.—This is a native of Kamtschatka. It closely resembles our common mushroom. It is gathered in the hot weather and dried. It is chewed like tobacco. It produces at first lightness of spirits, then giddiness, flushing of face, and finally, in sufficient quantities, intoxication. Some of our own mushrooms are also narcotic in their effects. It is well known that certain varieties when eaten produce poisonous effects.

Thorn Apple (stramonium).—This is indulged in by the Indians of the Andes. From the fruit of the plant they prepare a strong narcotic drink. It produces stupor and sometimes furious excitement.

Among other stimulating and narcotizing preparations I may merely mention—

Arrack,	made from rice,	used by the	Hindoos and Malays.
Raki,	"	"	Greeks and Turks.
Samshoo,	"	"	Chinese.
Sacio,	"	"	Japanese.
Kawa,	"	macropiper	Pacific Islanders.
Vodki,	"	potato	Russians and Poles.
Tallah,	"	millet	Abyssinians.

In surveying the history of the use of these various stimulants and narcotics we learn

1. *That some forms of stimulant or narcotic have been used all over the world, and from time immemorial.*

2. *That their use has increased with the progress of civilization.*

3. *That at the present time they are used to the greatest extent and in the largest variety by the most civilized and Christian nations—England, France, Germany, and the United States.*

According to the recent report of Mr. Wells, special commissioner of revenue, it seems that *the value of the liquors annually sold over the counter in this country alone is equal to half of our national debt.*

This says nothing of tobacco, which is now used so freely; nothing of tea and coffee, which are used in every family, and to the extent of several pounds annually for every man, woman, and child in the country; nothing of opium, which is used habitually by nearly 100,000 of our countrymen; nothing of chocolate (cocoa, shells, &c.), which as a substitute for coffee is found in every saloon and hotel, and freely used in thousands of families.

It is safe to say that the money annually expended for stimulants and narcotics in this country *would pay the whole of our national debt, principal and interest*, and at the same time support all our benevolent societies.

Important and practical questions now arise. Shall we continue to use these stimulants and narcotics? Do they fulfil any purpose in the animal economy? Are they, in any sense, food? Would not the world be better without them? If we are to use them at all, what shall we use? How shall we use without abusing them?

Before attempting to answer these queries I must say, at the outset, that I *cannot* answer them for every individual. Every person must decide for himself, in the light of science and of his own individual experience, whether to use these substances or to abstain from them, just as he decides what kind of food to eat and what to avoid. All I shall attempt to do will be to give information and to arrange facts which may help my readers in answering these questions. All I can do is to present the *general* principles of science, by which my readers may enlighten their consciences and learn their *individual* duty.

There are some general facts that will apply to all these stimulants and narcotics.

1. *They all contain poison.* The active principle of tea is *theine*; of coffee, *caffeine*; of chocolate, *theobromine*; of tobacco, *nicotine* and *nicotianin*; of opium, *morphine*; of hops, *lupuline*; of fermented and distilled liquors of all kinds and varieties (wines, beers, cider, porter, whiskey, rum, gin, brandy, arrack, kouniss, samshoo, sacio, kawa, vodki, toddy, tallah, raki); is *alcohol*.

All these active principles are poisonous. Nearly all of them,

when given in sufficient quantities, will kill animals, and in a very short time.

Even *theine* and *caffeine*, in large doses, will kill animals, as has been recently proved by the experiments of Dr. Amory. That nicotine and alcohol will kill animals and men is now known to every one. When *theine* is taken pure by a human being it causes terrible nervousness and distress, and probably a sufficient quantity would prove fatal. The probability is that experiments would show that the active principles of all the other stimulants and narcotics are capable of producing fatal results, when given in sufficient quantities.

The fact that all these stimulants and narcotics contain poison does not assist us much in the solution of the question of their effects on the system, *because there is poison, in nearly all of our ordinary articles of diet.*

There is poison in our garden lettuce, and in the hops with which we raise our bread. The oils contained in our table mustard and pepper, and in that most common and healthy vegetable, the onion, are among the most acrid and destructive poisons with which chemistry is familiar. Phosphorus is one of the most virulent of poisons, and even in very small doses it has been known to destroy life; in moderate quantities it powerfully stimulates, like alcohol. And yet phosphorus exists in all nitrogenous alimentary substances, and has been proved to be indispensable to the vigor and health of the brain. Children especially, who for any long period are confined to food in which phosphorus does not exist to a sufficient degree, are very apt to suffer from disease of the bones and scrofulous enlargement of the glands.

The most skilful chemistry can hardly prepare a meal that would not contain more or less poisonous elements. There is poison in the dry loaf and plainly-served vegetables of the hardy laborer, in the yolk of the egg that we give to the tender invalid, and in the very milk that the infant draws from its mother's breast.

But the use of poison is not confined to our articles of food. Poison is a normal constituent of the atmosphere. Even in the healthiest localities it contains more or less carbonic acid, and not unfrequently slight traces of iodine and nitric acid. Those who are most ignorant of chemistry know that these agents, when unfiltered, are terribly destructive and fatal. Therefore, then, not only in every mouthful of food we eat, but in every breath of air we inspire, there are elements of poison that, in a pure and uncombined form, would prove instantly fatal to all animal creation. But the consumption of poisons does not stop with our air and food.

The water we drink or in which we bathe is rarely, if ever, found in a state of absolute purity.

If there be any drink in the world that may properly be called natural, surely it is the waters of our springs and rivers, but all of these contain poisonous substances in greater or less proportions. The purest springs hold in solution the chlorides of sodium, magnesium, or potassium, as well as lime, in combination with sulphuric acid. Even rain-water, the purest of all, contains traces of nitric acid, that it derives from the atmosphere in its passage through it.

2. *They all seem to have the power of sustaining the system within certain limits, and to a certain extent supply the place of food.*

Tea and coffee drinkers know by experience that they can both live and work on their favorite beverages without any solid food whatever. There are thousands—aye, millions—in the world who would give all the rest of the breakfast rather than their cup of coffee. There are millions of ladies in the land to whom their cup of tea is more important—or, at least, seems to be so—than all their other food.

Opium has a wonderful power of sustaining the system, the natives of the East working hard for days on nothing but a little of this drug.

Tobacco has the same power, though to a less degree. Great smokers are usually moderate eaters.

The South American coca has the same effect. The Indians there travel for days subsisting on nothing else.

Alcohol—in all its myriad preparations—is by some regarded as a powerful substitute for food. In fevers, in exhaustion, and in health even, it supplies the place of food. When used largely it impairs the appetite, and may almost destroy it. This fact is a powerful argument against the free use of this agent.

Everybody knows that sots and debauchees are usually moderate eaters. The confirmed drunkard always prefers his grog to his dinner. Those who indulge in champagne and brandy to any extent partake less freely of the solid articles on the table, even when the system is in excellent health, and all the conditions for a vigorous appetite are fulfilled. The fact that drunkards eat so little, and even neglect their meals, has long been so patent to superficial observation, that temperance men have seized upon it—and with good reason—as an argument against intemperance. The body needs positive, solid nutriment, and any great excess in the use of alcoholic liquors must so benumb the appetite that it will not crave sufficient food to keep the system in its best working condition.

The classes who are poorly fed, half starved, are apt to indulge excessively in alcohol.

It is chiefly the poorer and laboring classes—mechanics, artisans, draymen, stevedores, and the like, who breathe impure air, in close tenant-houses, whom poverty compels to subsist on meagre and insufficient food—that particularly appreciate the need of the “accessory or *negative* food” supplied by alcoholic stimulants. They find by experience that, under the depressing circumstances in which they live, move, and have their being, they can work harder and longer with their glass of beer, or perhaps of whiskey, than without it. It is a matter of fact, which very few recognize, that most of the liquors are used by the poorer and laboring classes.

This fact, that the lower orders of society are the chief consumers of ardent spirits, is of such vital import in the study of social economy, that it is hard to understand why it has been so strangely ignored. New York City consumes an immense quantity of fermented and distilled liquors—more especially the beers and whiskey—but the greater portion of it is used by the occupants of the tenant-houses.

Indeed, most of our grog-shops are located in those quarters of the city that are frequented by the ignorant and the lowly. The intelligent and wealthy do indeed keep wines and brandies in their houses—and there are a small minority who use them regularly and freely at dinner, or on other occasions are habitual and it may be excessive drinkers—but take the country through, the lower orders of society, in proportion to their numbers, use far more of intoxicating drinks than the intelligent and cultivated.

Very many experiments have been made in order to determine in what way stimulants and narcotics thus sustain the system and take the place of positive food.

It is the opinion of many able physiologists that stimulants and narcotics—or some of them, at least—*retard the change of tissue*. In nautical language, they “slow the fires” of the system.

Alcohol and opium are now very largely and very successfully used in the treatment of many of the severe fevers and inflammations. They have, in a measure, taken the place of *bleeding and calomel*.

3. *They all are liable to make slaves of those who indulge in them to excess.*

It is an interesting fact, however, that most of the intoxication from alcoholic liquors of civilized lands is confined to the ignorant and low-born.

In spite of all the warnings that have been given to the children of aristocracy, the fact remains, that among the educated and influ

ential the number of those who go down to drunkards' graves is so exceedingly small, that any isolated case that occurs elicits the deepest interest and sympathy. Among these classes—even among students and graduates of colleges—there are not a few who at some period of their lives occasionally make excessive use of intoxicating drinks, but yet not in such a way as to be grossly intemperate. According to the police reports of New York City, and the valuable statistics of Mr. Halliday, of the Five Points Mission, nearly all of the arrests for intemperance in the Metropolitan district are from the lowest rank of foreigners.

In England, also, gross intemperance is comparatively rare among the educated nobility, but is distressingly common among the peasantry. The truth is, the intemperance of the poor and ignorant is more the *result* than the *cause* of their depressed condition. The logical explanation of this is not difficult. "Accessory food" in the form of whiskey and beers compensates in a measure for the insufficiency of their diet. Moreover, the tonic properties of alcohol temporarily brace them against the evil effects of foul air and damp, gloomy homes. Then again, the classes who are thus unfortunately circumstanced in regard to material comforts are usually still more deficient in moral and mental training, and when once hunger or thirst or weariness has driven them to the bar-room, they have not sufficient moral force to stop when they have supplied the demands of nature; hence follow intemperance and its long catalogue of woes. This is, after all, the natural history of every form of vice. I say, then, that intoxication from alcoholic liquors is pre-eminently the vice of ignorance and poverty. In proportion as communities grow at once wiser and better, in that proportion do they become more temperate. The ruling classes of England during the last century were far less moderate in the use of ardent spirits than the nobility of the present day.

The Roman patricians were almost as great debauchees at their feasts, even on their meagre variety of drinks, as are the common laborers of our day in the ale-houses and corner groceries.

Rome cultivated the minds of her youth, but not their morals—thus the citizens yielded to gluttony and intoxication. The Spartans cultivated both mind and morals, and were paragons of sobriety.

In our day the educated ruling classes of society injure themselves more by tobacco than by alcohol. Among the very highest classes even coffee injures more—though in a very gradual way—than alcohol.

Our people are not able to bear tobacco and coffee, or even

tea, as formerly, or as perhaps their fathers and mothers were able to do.

The types of constitution change with the progress of civilization, and the food and drink must change accordingly. Very many of my patients tell me that they cannot use coffee or tobacco at all, and some are obliged to forego even tea.

Tea is used too strong in this country, and there are thousands of ladies especially who subsist on it too exclusively, and are therefore seriously injured by it. Tea in excess begets nervousness, sleeplessness, dyspepsia, headache, constipation, hysteria, and all forms of nervous disorder. Its evil effects come slowly, but they often come too surely. Coffee injures more than tea. Coffee and tea are both excellent drinks, and fortunate are they who can use them without injury.

Those who work hard with their muscles in the open air can use tea, coffee, tobacco, more freely than those whose lives are sedentary and confined. During the late war the soldiers and sailors thought more of their coffee and tobacco than of all their other rations.

4. *They vary in their effects in different climates.* Tea is a product of temperate climes, and can be used with about equal benefit everywhere and in all countries, and with no greater injury in one country than another. *It is, however, more largely used in cold or cool latitudes.* The Russians are the greatest tea-drinkers of the world, next to the Chinese. Tea is very freely used in England. In France, Italy, Spain, and Turkey, coffee, in a certain measure, takes the place of tea. In our own country tea is more used in the Northern States and coffee in the Southern.

Coffee is a product of warm climes, therefore it can be used more freely in the torrid and sub-torrid zones than in the colder regions. The nations of the world seem to find this out by instinct, for the inhabitants of hot countries in both hemispheres use coffee very freely, while those of the colder regions in a measure substitute for it tea and alcoholic drinks.

During the late war our soldiers and sailors on the Union side used far more coffee, and probably without serious injury, than they had been wont to do in their Northern homes.

In 1864 and 1865 I was acting for a year and a half as surgeon in the navy, on the blockade in Farragut's squadron in the Gulf of Mexico. When I first arrived at the station,—which was off the coast of Texas,—and, indeed, for a number of months, I continued to abstain from coffee, as all my life I had been obliged to do in the North. Gradually, however, I fell into the habit of the officers

about me, and began to drink strong coffee three, four and five times daily. To my surprise I found that instead of being made nervous, sleepless, and dyspeptic by it, as would have been the case had I indulged even in a single cup at home, I actually improved in my health, and ever afterwards during my stay I persevered in taking the beverage at all my meals, and frequently at habit lunches.

When I returned to the North I was obliged almost immediately to stop my allowance of coffee, and have never since indulged in it. Shortly after my return I met a very intelligent gentleman, who had visited all the Southern States, and who related precisely the same experience in regard to the use of coffee. It is the habit of the Southerners to drink strong coffee on rising in the morning, at breakfast, and during the day as they may wish it. The same customs are observed in the warm countries of Europe.

Opium can apparently be used more freely in the warm countries of the East than in other parts of the world. Of the 400,000,000 who habitually indulge in the drug, probably only a comparatively few are ruined by it. Medical travellers in the East report that opium eating does not usually have as marked injurious effects on the inhabitants as it does with us. There are, of course, thousands who there use it to enormous excess, become slaves to it, and are made wretched indeed.

It is not possible that opium-eating will ever become a national habit in America. Of the 100,000 in this country who are said to use it, nearly all first resorted to the drug as a relief from pain. In Europe and America our tobacco, our tea, and our various forms of fermented and distilled liquors have saved us, and will continue to save us, from the opium-eating habits of the East.

Alcohol is a product of both temperate and warm climates, and can be used in all the latitudes. It seems, however, to be most injurious when excessively used in extremely hot or extremely cold climates. Nearly all travellers agree that in the polar regions or in the tropics more injury than benefit results from a large amount of alcohol in any form.

Tobacco, like tea, is a product of temperate latitudes, and like tea it can be used without any special or markedly observed differences of effects in all countries. Like tea, it can be indulged in with comparative impunity in the regions of the tropics and of the poles. All the injurious, all the beneficial, and all the negative effects of tobacco seem to be about equally observed in all latitudes. If there is any difference whatever in its effects in the various climates, it is this, that it can be used most freely in those which are warmest.

5. *They all vary in their effects on different constitutions.*

Chocolate, cocoa, shells—all these are mild drinks, but there are those to whom they are positively noxious.

Tea acts very differently with different temperaments. I know a man who is so exceedingly sensitive to this beverage, that even a cup of the very weakest tea will keep him awake all night. I know many who cannot habitually use tea in any shape. On the other hand I know many—and so do we all—who can take several cups daily of the very strongest tea without showing any effects from it.

Coffee is terribly poisonous to very many, especially in our northern latitudes, while others can indulge in the charming beverage to an almost unlimited extent. I am convinced that the number of those among us who cannot drink coffee is increasing. I account for this by the changes being made in the type of constitutions. We are growing more impressible, more nervous, and more sensitive to those drugs and agents that directly affect the nervous centres. I doubt whether more than half of those in this country who lead sedentary and confined lives can habitually use coffee with impunity. Those who labor hard with their hands out-doors can use it more freely.

Opium very rarely has the effects described in De Quincey's "Confessions of an Opium-Eater." Even those who use it to enormous excess do not usually experience any of those dreamy visions which his gifted imagination has pictured in such brilliant and hideous colors. Opium varies in its effects even when given in small doses. The majority are put to sleep by it, but some it keeps wide awake. There are those whom it makes actually raving.

Alcohol varies in its effects with different constitutions. There are *many hundred different* forms of fermented and distilled liquors now in use in the world. The differences between these are very wide.

The strongest whiskeys, brandies, rums, gins, &c., contain over *fifty per cent.* of alcohol. The stronger wines—port, madeira—contain from *ten to twenty per cent.* of alcohol. The weaker, lighter wines, as hock, claret, Burgundy, champagne, contain from *five to ten per cent.* *Ales, porter, and cider* contain but from *three to six per cent.* of alcohol.

It is manifest at a glance that these different forms of alcohol must not only vary widely in their effects, but also in their effects on the same individual; for besides the alcohol, all of them contain *other important substances, on the proportions of which their influence on the constitution must very materially depend.* Some can drink claret, Rhine wines, hock, cider, beer and porter, and

are unable to use rum, gin, or brandy. Some can drink beer, but not cider. Hard cider with many makes the head ache. For others it clears the digestion, corrects the liver, and sharpens the appetite. Gouty patients are oftentimes unable to take a drop of champagne, or acid wines of any kind or in any quantity, without paying terrible penalties. Many who cannot use brandy, even when largely diluted, find that claret, Burgundy, and even champagne, give them no discomfort.

There are no special rules to guide one in the selection of wines. If one feels that he must use wine, let him find out by *experience* what kind serves him best. As a rule, claret and Rhine wine agree with more persons than any other kinds of wine that reach this country. There is no question, however, that wines are luxuries and not necessities for us, and that life and health can be perfectly maintained without them. One of the strongest arguments in their favor is, that they keep us from abusing ourselves with stronger liquors, and with other and more potent forms of accessory food, such as tobacco, opium, and coffee. But tea and coffee, opium and tobacco, are, strictly speaking, luxuries, although in our modern civilization they have long been deemed as actual necessities. There is no question that health and life, at least in individual cases, can be maintained without any of these substances.

Tobacco varies wonderfully in its effects with different individuals. With many the first whiff of a cigar is disagreeable, and the first "end" absolutely nauseous; but there are very few who cannot become so accustomed to the drug as to enjoy it. I must, however, plead an exception.

Tobacco dries up some, fattens others. In some it causes dyspepsia, in others it relieves it. Some use it to keep awake, others to promote sleep. With all persons, or nearly all, it has a tendency to diminish the appetite, and within certain limits to take the place of ordinary food.

Persons who have been slaves to tobacco very often suddenly or gradually break up the habit; the results are of the most opposite character. Some at once improve in health, grow fatter and stronger; others at once go backward, and grow thinner and weaker. It constipates some and relaxes others.

On many it produces all the horrors of extreme nervousness. Some it makes brilliant, others it stupefies.

Some take a smoke *before* going to battle, to fortify them for severe and unusual effort; others take it *after* the battle, when their effort is completed, to calm their nerves and soothe them to slumber.

6. *They vary in their effects at different ages and times of life.*

The reason of this is quite apparent. The constitution varies at different times of life. The size and quality of the brain, of the muscles, of the bones, vary wonderfully between infancy and old age. A youth of twenty-one is a different being from what he was at the age of one year. A man in middle life is a different being from what he was at twenty-one. An old man at seventy is a very, very different being from what he was at middle life.

It is very clear, therefore, why our food acts differently with us at different periods of our life. Our food is almost a constant quantity. It does not vary much in its quality from year to year, while our bodies into which it enters are ever changing. As with ordinary food, so with stimulants and narcotics.

Many who have been accustomed to indulge, as they desired, in tea, or coffee, or tobacco, or chocolate, or in some form of fermented or distilled liquor, find sometimes that they are obliged to discontinue the use of some one or all of them. The rule works both ways. I have had patients who have found by trial and experience that they could use with impunity, and perhaps with benefit, stimulants and narcotics which formerly were exceedingly injurious to them.

There are many who are obliged to abstain from coffee all their lives until they reach old age, when they find, to their great surprise, that they can use it freely. Probably this experience would be repeated more frequently if people only made trial of themselves in this respect every year or two during their lives.

Infants should not habitually use stimulants and narcotics. Those who are growing need positive and not negative or accessory food. Their tissues need to be changed rapidly in order that the growth may be carried on. In infants the brain and nervous system is but little used, and therefore but little needs the aid of stimulants and narcotics. The intuition of the people everywhere is opposed to the use of these substances by very young children.

For the same reason, *children and youth should not use stimulants and narcotics until they arrive at years of discretion.*

There are two very decided arguments against the use of tea, coffee, tobacco, fermented and distilled liquors, by those who are under fifteen or twenty years of age. *First*, they do not at that time need *negative* food, but on the contrary as much positive food as they can digest. Growing children need fresh meat, with fish, oysters, good vegetables, wholesome fruit, and all in a palatable variety. They do not need anything that will interfere with the rapid changes of tissue that always accompany the growth of the

body. *Secondly*, children and youth have not sufficient self-control and force of mind to use these substances without becoming in a sense slaves to them.

It would be better for the young and growing generation if they abstained entirely, or nearly so, from tea, coffee, until fifteen or twenty years of age, to say nothing of tobacco, fermented and distilled liquors. Our children drink tea and coffee too young, and in too large quantities. Like all of us, they take their *tea too strong*. The best drinks for children are milk, cocoa, and water.

Still further, *if young men would abstain entirely from tobacco and alcoholic liquors until the age of twenty-five or thirty, intoxication and all forms of intemperance would be almost unknown by the next generation.*

Intemperance in the use of tobacco and alcohol is usually the result of habits formed in youth, or before the age of twenty-five or thirty.

On the other hand, persons of mature age, and especially those in the decline of life, are usually benefited by a reasonable indulgence in tea or coffee.

In the very aged the digestion is often weak, and therefore the sustaining power of stimulants and narcotics is especially grateful. Tea is pre-eminently the drink for the aged. Undoubtedly there are many even among old people who injure themselves by tea, coffee, as well as by tobacco and alcohol; but the proportion of persons over sixty who thus injure themselves is very small indeed in comparison with the thousands of youths who are undermining their manly vigor and impairing their prospects for usefulness by indulging in these forms of negative food.

7. *They are nearly all liable to be adulterated.*

Tea is adulterated with at least twenty-five different herbs or imitations that more or less closely resemble the original article. Green teas are adulterated in China, according to Mr. Fortune, by adding to them various coloring substances. Prussian blue and gypsum are much used for this purpose. The Chinese never drink the adulterated teas, but sell them to foreigners, because they bring a higher price. Indigo is also used for the purpose of adulteration. Tea is also much adulterated with what is called "lie-tea," which is composed of the sweepings and dust of the warehouses.

Coffee is largely adulterated with chicory, as everybody knows. Chicory itself is adulterated with Venetian red, and the Venetian red is adulterated with brick-dust. (See chapter on *Adulterations*.)

Fermented and distilled liquors are adulterated in thousands of

ways; even pure *hard cider* is difficult to obtain in our cities. Much of the cider that is sold in the saloons is made of sugar, water, and tartaric acid. Sometimes I have searched for a long time in New York, and in many different stores, for pure hard cider, and without avail. The bottled cider is very apt to be impure. Sulphite of soda and other chemicals are mixed with it in order to preserve its sweetness. It is very unfortunate that it is thus difficult to get pure hard cider, for it is a most valuable beverage. It is usually an excellent drink for the nervous and dyspeptic. It is the Rhine wine of America, and better, far better would it be for our American ladies if they took more hard cider and less tea and coffee.

Malt beer is adulterated with *cocculus indicus*, tobacco, sweet flag, sweet gale, yarrow, and thorn-apple. The Javans adulterate their rice beer with cakes, made of onions, black pepper, and *capsicum* (Johnston). It is *not* adulterated with *strychnine* to any extent.

Wine is adulterated with poppy-heads, and in myriads of ways that it is not necessary to mention.

Pure wines can be obtained in this country from California, and also from Europe, by those who will take special pains and make the matter a study. In wine-making countries the pure article is as common as water. It may yet be so with us. The introduction of pure wine into our country would not cure intemperance, though it might diminish its horrors. Intemperance is the vice of poverty and ignorance, and can only be driven from the land by the introduction of *knowledge*.

Ardent Spirits,—rum, gin, brandy, and whiskey,—as everybody knows, are adulterated to a most fearful degree. Even those who pay the highest price are by no means sure that they obtain the pure article. All of these drinks are manufactured from chemicals.

According to the recent analyses of Prof. J. C. Draper, fusel oil and other bad ingredients are found in highest-priced liquors, and in the most aristocratic hotels and saloons of New York City. These adulterations are not all, however, of such a kind as to seriously injure the health, but all of them are less beneficial and more injurious than alcohol. The rums, gins, whiskeys of the poorer classes are horrible mixtures, and thoroughly deserve their well-known title—"chain lightning." *Much of the intemperance of the poorer classes is produced not so much by alcohol as by cocculus indicus.* It is a terrible substance, and is terribly pernicious. It is largely used in the adulteration of beer.

But, after all, it is an exaggeration to say that pure, or nearly pure liquors cannot be obtained in this country. However it may have been in the past, *there is no question that at the present time it is entirely possible to obtain pure wine, and nearly pure liquors, of some other kinds, provided we go to the proper authorities* in such, and make the matter a special study. They will, at least, be about as near to absolute purity as our tea, our coffee, or our tobacco. Brandy and champagne are very rarely found here in absolute purity.

The *Boston Journal of Chemistry*—a good authority—says that thousands of gallons of claret are made by allowing water to soak *through shavings*, and adding thereto a certain *portion of logwood and tartaric acid, and a little alcohol*. Good judges can hardly tell the difference between this mixture and the genuine article.

This is unfortunate, for good, pure claret is one of the best of our wines, and is the least liable to injure.

According to Pereira, molasses, sugar, and honey are used to increase the weight of tobacco, and also to make it more palatable. The leaves of the rhubarb, the beech, the walnut, mosses, bran, beet-root dregs, liquorice, rosin, yellow ochre, fuller's earth, sand, saltpetre, common salt—all these substances have been detected in tobacco.

Our ordinary articles of food are likewise adulterated. It is difficult to obtain pure groceries of any kind. It is unfair to claim that all the adulteration of the country is confined to the dealers in stimulants and narcotics. The same difficulty is felt across the water.

In the light of the facts here presented, it is evident that every one owes it to the *cause of temperance* to extend a knowledge of the effects of stimulants and narcotics among all classes. The evils of intemperance in the use of stimulants and narcotics, and especially in the use of alcoholic liquors, are so terrible and so gigantic *that all good citizens should combine their best efforts to diminish it*. With all its errors, excesses, and misfortunes, the temperance cause has been one of the most successful reforms of modern times. *The great antidote of intemperance, as of every other evil, is Education*. If our children were all brought up to a knowledge of the important facts concerning stimulants and narcotics—their nature and effects on the constitution, in moderation and in excess, in health and disease, in youth and in maturity, in different climates; *the mischievous and deadly adulterations* to which, in these days, most of them are so liable; the history of their rise and popularization in modern society, and their effects on civilization—

if these subjects were continually impressed on the minds of all the rising generation everywhere, intemperance, with all its wretchedness and woe, would be practically driven from the world. Our people perish for lack of knowledge.

During the past three centuries there has been great progress in sanitary science; and one important reason why men live longer now than formerly is, that better attention is given to the laws of health. It was not so much obstinacy, or perversity, or love of slow suicide, that made the people of the middle ages neglect to clean their streets, as ignorance of the great fact which now all admit, that filth engenders disease. Just so the majority of drunkards and slaves of opium form their evil habits, not so much through a wicked desire to destroy themselves, as through erroneous or exaggerated ideas concerning the nature and effects of these substances.

The introduction of pure cheap wines into our country might somewhat diminish intemperance, but would by no means eradicate it. There is intemperance in France and Germany, where wine is drunk as freely as are tea and coffee with us; although, according to statistics which I gathered while in Europe, there is much less of it in Germany than in England and the United States. Wherever there is an ignorant and degraded population, and the material on which to get drunk, there we shall surely find more or less intemperance, although the habit is very much modified by climate and national temperament. The Anglo-Saxon race is especially inclined to intemperance. The vice was formerly common and popular among the ruling orders of English and American society, and was not regarded as a disgrace. Thanks to the temperance movement and the general progress of the race, drunkenness has long since ceased to be a fashionable vice either in England or America. The habit condemns a man in society, and blasts his prospects. With some painful exceptions, intemperance in these countries is confined to the ignorant and degraded.

8. *They all may be used so as to directly injure the nervous system.*

Tea is one of the mildest of the stimulants, and yet there are thousands who are injured by it. Coffee injures more constitutions among the *intelligent* classes of American society to-day than is commonly supposed. It would be better for our American ladies if they would use less tea and coffee and more cider, sour wines, and good beer.

It is a very significant fact that the men of America—even those who indulge freely in tobacco and in fermented and distilled liquors—are much healthier and stronger than our women, who

rarely use these substances, but use more tea and coffee than their lords. The complicated question arises, Why is this so? Is it not, at least, probable that our wives and mothers would be stronger if they would use less tea and coffee, and more cider, beer, and wine, like the Germans, French, and English?

Coffee injures thousands. Only a fractional portion of those who lead sedentary lives in America can drink it habitually all their lives. It can bring on every nervous symptom imaginable.

Tobacco is capable of producing nearly every possible nervous symptom. *Dyspepsia*, *hypochondriasis*, *neuralgia*, *sleeplessness*, are sometimes caused by it.

Tea and coffee give rise to the same disorders even more frequently than tobacco. Insanity has been charged upon tobacco, and it has been stated that the increase of insanity in our modern civilization is largely due to the increase in the consumption of tobacco. This statement cannot, however, be proved, and is not at all probable. *There is an immense amount of false reasoning on this subject.* A person who has been in the habit of using tobacco is taken insane. Some of his friends, who may not themselves use tobacco, and who regard chewing and smoking in public as breaches of etiquette, as they truly are, at once give out that his insanity was caused by tobacco. This inference they have no right to make. They might with just as much propriety have charged his insanity upon the tea or coffee, or cider or beer, which he may very likely have been in the habit of using.

They might even have charged it upon his daily food, for there is no question that bad diet often brings on nervous diseases.

On the causes of insanity, Dr. Maudsley makes the following judicious remarks:

“Perhaps one, and certainly not the least, of the ill effects which come from some of the conditions of our present civilization is seen in the general dread and disdain of poverty, in the eager passion to become rich. The practical gospel of the age, testified everywhere by faith and works, is that of money-getting; men are estimated mainly by the amount of their wealth, take social rank accordingly, and consequently bend all their energies to acquire that which gains esteem and influence. The result is that in higher departments of trade and commerce, speculations of all sorts are eagerly entered on, and that many people are kept in a continued state of excitement and anxiety by the fluctuations of the money market. In the lower branches of trade there is the same eager desire for petty gains; and the continued absorption of the mind in these small acquisitions generates a littleness of mind and meanness

of spirit, where it does not lead to actual dishonesty, which are nowhere displayed in a more pitiable form than in certain petty tradesmen. The occupation which a man is entirely engaged in does not fail to modify his character, and the reaction upon the individual's nature of a life which is being spent with the sole aim of becoming rich, is most baneful."

The truth is, that no one has a right to charge the nervous diseases—insanity, or any other form—of any individual upon any special kind of diet, or of stimulant or narcotic that he may have been in the habit of using, without overwhelming evidence and after the most careful study. It is indeed extremely difficult for a physician—whose life is devoted to the study of disease—to decide in any given case of dyspepsia, neuralgia, paralysis, hypochondria, sleeplessness, debility or insanity, whether the symptoms were or were not brought on by the tea, the coffee, the tobacco, or the alcohol that the patient has been accustomed to use. The newspapers report at times that tobacco has caused death. Some of our books on hygiene declare that insanity has increased of late years in direct proportion to the increase in the use of tobacco. Now it is impossible for one not a physician to *tell in any given case whether death has been caused by tobacco, or by tea, or by coffee, or even by alcohol, except in very marked cases indeed.*

Therefore, all such reports are unreliable. Precisely so with the relation of insanity to the use of tobacco. The question is a very, very complicated one, and cannot so easily be answered. It is true that insanity has somewhat increased of late years—though not to the extent that is commonly supposed. It is also true that the consumption of tea, of coffee, of tobacco, of alcohol, and of opium has greatly increased in our civilized land. Shall we attribute the increase of insanity to the tea, the coffee, the tobacco, the alcohol, or the opium? We see at once that the question is very difficult to answer.

Still again, there has been a wonderful increase in the cares, the labors, the anxieties, the passions, and the strifes of our modern civilization. Over-work and over-worry of the brain are the great causes of diseases of the brain. But, after all, it appears from statistics recently published that insanity has not increased to the extent that is commonly supposed.

That nervous diseases in general have increased, there can be no question; but this increase is probably due more to the passions and strife of our modern civilization than to the use of any special article of food or drink.

Alcohol, when used in large quantities and for many years, un-

questionably injures the brain and nervous system. This view is confirmed by actual examination of the brains of those who have died drunkards. Alcohol also injures the liver, the stomach, and indeed the whole system. There is, however, great liability to err, just as in the case of tobacco. Because a man who has been addicted to alcohol dies, even in his prime, of some disease of the brain, stomach, liver, or other vital organ, we are by no means always justified in convicting him of death from alcohol. So many causes are continually acting upon us that the question is a very complex one, and can only be answered after careful study and close investigation by some professional authority.

There are two well-known diseases that come from the abuse of alcohol. They are *delirium tremens* and *chronic alcoholism*. The symptoms of the former are well known, and need not be here repeated.

The symptoms of *chronic alcoholism* are (according to Marcet)—

1. Inability to sleep.
2. Trembling.
3. Giddiness and headache.
4. Hallucinations.
5. Weakness.
6. Difficulty of breathing.

All of these symptoms may come from a thousand other causes besides the abuse of alcohol, and in any given case it is impossible even for a physician to settle the question without very close scrutiny. Of late years much attention has been given to the reformation of drunkards. It is now well understood that *intemperance* is very often a symptom of *insanity*. It is a kind of *mania*, and has been honored with various special names—"dypsomania," "methomania," "vinomania," &c., &c. This *mania* may be the result or the cause of intemperance. Long-continued abuse of alcohol may so injure the brain that the victim becomes insane on that subject, and is unable to control his appetite. On the other hand, insanity, how ever produced, may give rise to intemperance.

In either case the patient should, if possible, go to an inebriate asylum. This disease, if taken early, and well managed by skilful hands, is nearly as curable as any form of insanity. The State reports of the asylums are very encouraging. *Much of the intemperance of our time, especially among the educated classes, is the result of insanity, and should be treated accordingly. The pledge never saves such patients. For such total abstinence is a duty. If they cannot control themselves, let them, if possible, go to an asylum.*

Opium, when used habitually and for a long time, produces worse effects than tea, or coffee, or alcohol, or tobacco.

These effects have been very forcibly described by De Quincey, and in the work recently published, entitled "The Opium Habit." All of the writers on the subject are, however, inclined to exaggerate the horrors from which they have suffered. Thousands take opium and take it habitually, and take it in large doses and for a long time, and yet never experience the dreams of De Quincey, or the sufferings depicted in the "Opium Habit."

The results of opium-eating must depend, and very manifestly, on the temperament. That opium is the most powerful for evil of any of our common stimulants and narcotics, all will admit. If the habit of opium-eating were to become universal in our climate, I should tremble for the results. I have no fear that we shall ever be thus afflicted. Our tea, our coffee, our tobacco, our large and abundant variety of fermented and distilled liquors, every year improving in quality, will undoubtedly continue to save us from the horrors of opium in the future as they have done in the past.

I am inclined to forgive tea, coffee, tobacco, and alcohol whatever evil they have wrought in the world, for this one great redeeming benefit—that they have, in a good measure, delivered us from the opium-eating habits of the East.

Opium-eating, like the use of alcohol, is often a symptom of disease of the brain. Like chronic alcoholism, it may be either the result or the cause of mental disease. This affection, which is, I am happy to say, quite rare in our country, is called *opio-mania*.

9. *They have never been successfully prohibited by law.* A complete history of the attempts that have been made in various countries to prohibit or regulate the sale or use of stimulants and narcotics would be exceedingly interesting.

Law has been directed not only against alcoholic liquors, but also against opium, against tobacco, and against coffee.

The government of China used vigorous and desperate measures to prevent the introduction of opium in that country, but it failed.

Opium, however, has been less opposed by law than tobacco, and possibly that may be one reason why it is less used at the present. Always and everywhere the breeze of opposition fans the flame of enthusiasm, and it is as true now as in Bible days, that bread eaten in secret is pleasant. Nothing advertises a substance so thoroughly as to oppose it by law.

It is with stimulants and narcotics as with books. The more widely and severely are they criticised, the better the sale.

Tobacco made trouble everywhere, and has fought and triumphed in more battles than any other stimulant or narcotic.

King James I. of England wrote, as everybody knows, a terrible counterblast against it. In the beginning of the seventeenth century, Abbas, the first Shah of Persia, "proclaimed that every soldier in whose possession tobacco was found would have his nose and lips cut off, and afterward be burnt alive." One of the Sultans of Turkey—Amurath IV.—made the use of tobacco a capital offence. Another Sultan ordered that every one who was caught in the act of smoking "should have his nose pierced with his pipe." One of the Czars of Russia punished smokers with the bastinado and the cutting off of the nose. A bull was thundered against the habit of smoking and snuff-taking in church by Pope Urban VIII.

Alcohol has been regulated and prohibited in every way conceivable. The history of the laws that have been enacted against this substance would make a volume.

The recent enactments that have been made in this country—our prohibitory and license laws—are very familiar, and need not be cited.

Coffee also has triumphed over great opposition. In Constantinople the priests used all their influence against it, but in vain. In France, Madame Sévigné—a high literary authority of the time—tried her best to prevent the popularization of the beverage. In London, also, coffee found virulent enemies, but there, as everywhere, it triumphed over all.

From a very interesting paper in a recent issue of "Appletons' Journal" I extract the following. We see that our good forefathers also were unsuccessful in their legislative attempts against stimulants and narcotics, even under the most favorable circumstances.

"In the good old times of which we write, it is evident that the evils of intemperance were as great as they have ever been in any portion of our history. Mr. Winthrop complains bitterly of the amount of hot drinks consumed by the young people on board the *Arbella* during the voyage from Southampton to America; and every art of legislation was devised to check the ravages of this vice, short of absolute prohibition, or any restriction upon the *private* use, by the more respectable members of society, of what is sometimes termed in the statute 'the good creature of God.' Mr. John Josselyn, gent., who visited Boston eight years after its settlement, says: 'I found two houses of entertainment, called ordinaries, into which if a stranger went, he was presently followed by one appointed to that office who would thrust himself into his company

uninvited, and, if he called for more drink than the officer, in his judgment, thought he could soberly bear away, he would presently countermand it, and appoint the proportion beyond which he could not get one drop.'

"The custom of 'drinking one to another, which draweth the abominable practice of drinking healths,' is positively forbidden by law. Among the reasons assigned by the General Court for this order, are the following:—

"'1. It was a thing of no good use.

"'2. It was an inducement to drunkenness, and occasion of quarrelling and bloodshed.

"'3. *It occasioned much waste of wine and beer.*

"'4. It was very troublesome to many, especially the master and mistress of the feast, who were forced thereby to drink more oft than they would.'

"Drinking with disreputable associates, more especially if it was not accompanied by judicious and timely remarks on the evils of intemperance, also appears to have brought the offender under the reproof of the magistrate. Thus 'Benj. Hubbard is solemnly admonished of his failing for being in company with James Brown and the rest, and often drinking of the strong-water bottle with them, *and not reproving them.*'

"A man, convicted of drunkenness in the year 1633, was sentenced to attend every day upon the session of the General Court, and in their presence wear the ominous scarlet cloth, with the letter D inscribed upon it. The thought will here suggest itself, whether some such exhibition as this might not have a salutary effect upon our modern representative assemblies, and also whether the general aspect of these bodies would not be somewhat enlivened if the erring *members* thereof were adorned in like manner with scarlet.

"Some time before the transfer of the patent to America, a petition was forwarded to the Massachusetts Bay Company to this effect: 'We especially desire you to take care that no tobacco be planted under your government, unless it be some small quantity for mere necessity and for physie, for preservation of their healths; and that the same be taken privately by *ancient men*, and none other.' It would appear as though 'the ancient men' were a little inclined to monopolize the poisonous weed.

"A few years later, we find that the court felt it to be necessary to relax in some degree the rigidity of the law; for it is ordered 'that no person shall take any tobacco *publicly*; and every one shall pay one penny for every time he is convicted for taking tobacco in any place.' Still later, the law is again modified: 'It is fur-

ther ordered, that no person shall take tobacco privately, in his own house, or in the house of another, *before strangers*; and that two or more shall not take it together, anywhere, under the penalty of eleven shillings and sixpence for every offence.'

"From the tone of legislation adopted soon after this, we may infer that the early settlers of Boston found it as hard to regulate such matters as these by law as their posterity have proved it to be. 'This court, finding that, since the passage of the former laws against tobacco, *the same is more abused than before*, it is therefore ordered that no man shall take any tobacco in the fields, except in his journey or at meal-times, upon pain of twelvecpence for every offence; nor shall take any tobacco in any inn or common victualing-house, except in a private room there, so as neither the master of the same house, nor any other guests there, shall take offence thereat.' Constables are further charged 'to take special notice of common coasters, unprofitable fowlers, and tobacco-takers.'"

I cannot attempt to lay down rules for my readers in regard to the use of stimulants and narcotics, as it would be in regard to the use of ordinary food. In all these matters each one must work out his own salvation with fear and trembling. *The individual experience of every man is a better guide than all the books on hygiene that have ever been written.*

All that I can do in this book—all that any scientific man can do—is to collect and arrange the *general* facts that bear on these subjects; to present the results of scientific study and the experience of mankind. By the light of these facts let each one guide his own life.

If you find by experience that you are positively benefited by any one of these stimulants or narcotics, then use it with the same judgment and moderation that you would use any article of food on your table.

If you find that you are becoming a slave to any one of these substances, disentangle yourself and make yourself master of the situation at all hazards and at whatever cost. You may know that you are abusing your favorite stimulant—be it tea, coffee, tobacco or alcohol—when you find that you are such a slave to it that you cannot possibly do without it.

If, on the other hand, you find by experience that you are injured by any stimulant or narcotic that you may be in the habit of using—*no matter how moderately*—drop it as you would drop a hot coal, and never give it another thought, even though you see your friends about you on every hand using the same substance even more freely than yourself, not only without injury, but with real apparent ben-

effit. In these matters every man must be a law unto himself. Some facts of my own personal experience may be of interest to my readers, and may perhaps help to illustrate the doctrine I am here endeavoring to teach.

At no period of my life have I been able to smoke even the mildest cigar, without experiencing immediate and long-continued uneasiness.

I have frequently experimented with smoking in order to test its physiological effects, and I have always found that, although it gave intensity and clearness to the mental operations, yet its influence on the nervous and digestive systems especially were so pernicious that I feel positive that even a moderate indulgence in the use of the weed for any length of time would undermine my constitution. I therefore totally abstain from tobacco—although I see about me on every hand those who use without injury a number of cigars daily—and although I am well assured that there are thousands who can smoke and chew and take snuff, even to a good old age, without any perceptible injury to themselves or their posterity. The law for them is not the law for me. While the use of tobacco may be right and proper for them, for me it would, with my present knowledge of its effects on my constitution, be a positive crime.

Coffee also affects me injuriously, and in very much the same way as tobacco, though with less rapidity. Therefore I very rarely indulge in it.

Weak tea in very closely restricted quantities seems to have on me only a pleasant effect. I strongly suspect, however, that I should do better to abstain from it altogether, and I should do so, provided I could always be sure of some warm drink of a different kind, or of some quality of acid wine.

Ale and porter, as we find them generally, affect me very capriciously. Therefore I do not habitually use them.

Hard cider and mild acid wines—claret, Rhine wine—almost affect me beneficially, and accordingly I frequently, though by no means regularly, use them. I go for weeks using them almost daily, and again weeks pass in which I do not think of them.

If I could always obtain them I should use them oftener, and take them at meal-time instead of tea or water.

The stronger liquors—whiskey, brandy, and the like, or even the heavier wines, sherry, port—I rarely use, because they seem to do me only harm.

I have presented my personal experience in this detail, in order to clearly illustrate the principles by which we are to be guided in the selection of our stimulants and narcotics.

Every individual is a law unto himself. Just as no human face is precisely like any other, just so no constitution is precisely like any other in its adaptability for special articles of food or drink.

There are those who, on account of the terrible evils of intoxication, desire to abstain entirely from all alcoholic liquors. This is a matter of conscience, with which science has nothing to do. In this luxurious age, all proper encouragement should be given to the spirit of self-sacrifice for the good of others; for the amount of injury wrought by these agents is beyond calculation. Poverty and ignorance, in their turn the mother of poverty and disease, are the natural results of excessive use of alcoholic liquors and opium. Physicians and physiologists are not all agreed as to the precise action of small quantities of alcohol on the human system; some regarding it as food, others as accessory or negative food, and others still as absolutely and unconditionally injurious, the difference in effect between a small and large quantity being one of degree only.

But all agree as to the evil effects of excess both on mind and body. Those who are interested in the subject are referred to my little work on stimulants and narcotics, "Eating and Drinking," also to Dr. Richardson's "Diseases of Modern Life." I do not agree with the extreme views of Dr. Richardson; but on this subject both sides and all sides should be considered by inquirers. One great fact is to my own mind beyond question, and that is that sensitiveness to stimulants and narcotics increases with civilization, and is nowhere so marked as in the northern part of the United States where nervous diseases are so common. We cannot bear alcohol and tobacco as our fathers could, and for the same reason that we cannot bear sitting in cold churches, going with wet feet, as was their custom. The increasing sensitiveness of the modern constitution is the great ally of the temperance cause. We are forced to abstain; for evil effects, even of moderate indulgence, are by many, especially females, felt speedily.

The only consistent teetotalism is that which abstains from all forms of stimulants and narcotics. The only consistent prohibitory law is that which should prevent the production, the importation, or the sale of all forms of tobacco or alcoholic liquors, or opium.

Such absolute teetotalism is very rarely seen among the adult population. In the whole circle of my personal acquaintances, extending through all ranks and grades of society, *I cannot now recall the names of a dozen consistent adult teetotallers.*

Such a consistent prohibitory law has not to my knowledge ever been *proposed or suggested* during all these fierce contests on

the subject of temperance. If proposed, it could never be enacted ; if enacted, no earthly power could enforce it for one day. The great fault of the noble heroes, who, in spite of their ignorance and errors, have so successfully engineered the temperance reform, is that they have taken *too narrow* a view of the question—have combated some *one* form of stimulant or narcotic, as alcohol, or tobacco, or opium, ignoring the rest. In this way they drive the disease from one part of the body to another, but do not thoroughly eradicate it.

To prohibit stimulants and narcotics from our modern civilization would be as morally impossible as it would be to prohibit the use of beef or bread or fruit.

The chief benefit that comes from prohibitory laws is that they call public attention to the evils of intemperance, and make intoxication disreputable. In this way they have indirectly been of great service.

With the progress of civilization and the consequent change in the type of constitution, we must instinctively change our habits in the use of stimulants and narcotics, just as we have done and are doing in the use of our ordinary food. The probabilities are that in the next century our brain-workers, at least in this climate, will use *less* strong tea, *less* coffee, *less* tobacco, and *less* strong alcoholic liquors. Intoxication and intemperance do not necessarily increase with the increased abundance of stimulants and narcotics. *Three centuries ago intoxication, on the average, was far more gross and flagrant than it is now ; and yet during these three centuries the use of stimulants and narcotics has increased, in variety if not in quantity, several fold more rapidly than the population.*

It is the same with licentiousness. It is a great evil now ; but it was a far greater evil three centuries ago. Both of these giant woes have diminished with the intellectual and moral elevation of mankind. If savage nations could have access to the immense variety of stimulants and narcotics that are found among the civilized, they would be as beastly in their intemperance as they proverbially are in their licentiousness.

In these latter days intoxication has *decreased because knowledge has increased*. The same law will be observed in the future. In proportion as mankind become intellectually and morally enlightened, in that proportion will they become temperate, however freely they may be provided with the different varieties of stimulants and narcotics. As long as ignorance and extreme poverty exist among men, just so long will there be intoxication and all forms of intemperance. (See *Alcoholism and Inebriety*.)

The foundations of Temperance, as of every other virtue, must be laid on these *four* great corner-stones—the *Family*, the *School*, the *Church*, and the *Press*.

AIR.

Common air is a mixture of four different kinds of matter, all of which sustain vital relations to organized existence. These substances are oxygen and nitrogen, watery vapor and carbonic acid. The two latter exist only in very small quantities. Of these substances, oxygen is of the most importance, and the one which is the most essential to life. Although it constitutes but about one-fifth of the ordinary dry atmosphere, yet it is the only part that is absolutely *indispensable* to existence. It is the oxygen of the air that supplies the lungs in respiration, and that excites combustion. Without it we could not produce light nor heat from any combustible substance, nor could animal life be supported for a moment. Nitrogen is purely negative in its character, and is merely designed to dilute the oxygen, so that the life of man and of all animals may not be consumed too rapidly, and that combustion may not be too fierce and ungovernable.

The carbonic acid of the atmosphere is to the life of plants what oxygen is to the life of animals. To animal life it is a deadly poison; to vegetative growths it is necessary food. Plants breathe just as animals do, only they reverse the process, and inhale carbonic acid and give off oxygen. Plants are therefore the great conserving forces of nature; they give off oxygen, that is essential to animal life, and breathe the carbonic acid that animals exhale, and which, if it were not thus consumed, would accumulate in such large quantities as to be fatal.

Every leaf of every species of tree on the face of the earth is covered with little pores that are continually sucking in carbonic acid from the air. The estimate has been made that “a common lilac-tree, with a million of leaves, has about four hundred thousand millions of pores at work sucking in carbonic acid; and on a single oak-tree as many as seven millions of leaves have been counted.”

During night-time plants reverse the process of the day, giving off carbonic acid and inhaling oxygen, and thus compensate for their great advantage over animals in point of numbers.

A moderate degree of moisture in the atmosphere is also essential to the healthy existence of both vegetable and animal life. The animal breathes in watery vapor, and thus helps to retain the normal moisture of the body. The plants give off watery vapor from

their leaves, and, were the air absolutely dry, this process would go on too rapidly, and the nice balance between the solids and fluids would be disturbed. The watery vapor also descends at night in the form of dew on the thirsty plants, and when accumulated in large quantities falls in showers. The rain, in its passage through the air, clears it of many substances floating in it that are unwholesome for respiration.

Our atmosphere is liable to become poisoned in a thousand different ways. From decaying vegetable matter, from the stagnant pools in swamps and filthy cities, from the vile garbage of the streets, from the breath and bodily exhalations of man and of all animals, from the combustion of oil, gas, wood and coal in the ordinary modes of illumination and heat—from all these, and from many other sources, the air is continually becoming poisoned with substances that are harmful, and, in sufficient quantities, fatal to existence.

This universal agent that surrounds our globe to a depth of fifty or a hundred miles; that is so essential to animal and vegetative life, that if it were taken away for a moment, the world would be left devoid of organic or inorganic existence; that is continually becoming laden with poisons, not only from animal and vegetable decomposition, but, worse than all, from animal breath and exhalations, and by the very means of light and warmth that add such a charm to civilization, ought *surely* to be thoroughly studied and understood in all its manifold relations by those who wish to follow the best methods of hygiene.

Brain-workers of all classes especially need to study the art of breathing. Amid the rush and whirl of our nervous civilization we are often in danger of starving, not for want of food, but for want of *oxygen*. To breathe well and plentifully, under our artificial system of life, requires special study and attention, just as much as it does to eat well and abundantly.

In order to breathe well there is need of good lungs and a general vigorous condition. This can only be maintained by activity of mind as well as of body, by resting the faculties through variations of employment, by abundance of sleep and food, superadded to a faithful and joyous cultivation of the moral nature.

In order to breathe well it is necessary to take more or less active physical exercise in the open air. In entire repose a man of average size inhales about 20 cubic inches of air with each inspiration, and at the same time gives off from his lungs considerable watery vapor and carbonic acid. In walking, running, sleeping, or in any kind of labor or play, there is an increase both of the air inhaled and of the substances given off from the lungs, proportioned to the

severity of the exercise. Walking, especially with an object in view, and in pleasant company, is one of the very best modes of exercise for brain-workers, because it allows of the full and free expansion of the lungs.

It has been computed by an accurate observer that an ordinary gas jet, when in full operation, vitiates as much air as eight human beings. This accounts for the much greater oppression that is felt after an evening's entertainment, than after an attendance upon an equally crowded gathering in the same place in the daytime.

But sermons on ventilation are becoming old stories now, and I can add little to what every intelligent member of society knows perfectly well. And yet most of our private houses, sleeping apartments and all, are badly aired. And as for public halls, there is scarcely one in the country that in respect to ventilation is adapted for the abode of more than an average-sized family, although hundreds and even thousands nightly crowd them.

If many people are confined in one apartment, with fires, and a great number of lighted candles or lamps, without due ventilation, the air soon becomes unwholesome and unfit for respiration; hence delicate persons are very apt to faint or become sick in crowded assemblies of any kind, or in any place where the air is injured, not only by the breath of many persons, but by fires, candles, &c.

The air of cities and large towns, where a great variety of manufactures are carried on, with a crowded population, is not only breathed over and over again, but is also loaded with exhalations, besides the effluvia constantly arising from slaughter-houses, privies, dunghills, and common sewers. To prevent the air from being thus injured, police-officers should take due care that the streets be *daily* cleared of all filth and rubbish; that the offal from slaughtering-houses be not suffered to accumulate; and that the common drains and sewers be frequently opened and kept clear from obstructions.

Burial-grounds in populous cities are a nuisance.

Air is sure to become corrupted and unwholesome wherever it stagnates long; hence the low, dirty, and close habitations of the poor, as well as jails, prisons, workhouses, and hospitals, where the strictest attention is not paid to ventilation and cleanliness, and a number of persons are crowded together, may be considered as lurking-places in which typhus and other malignant fevers are likely to be generated, and are frequently communicated to those who visit them, or are within the sphere of their influence.

No house can be wholesome where the air has not a free passage through it. Houses ought to be daily ventilated by admitting a

current of fresh air into every apartment. Instead of making up the beds as soon almost as people rise from them, the different coverings ought to be turned down, or be wholly taken off, exposing them for some time to the fresh air.

In jails, hospitals, ships, &c., where this process cannot be gone through, the foul air may be expelled, and fresh air introduced by means of ventilators. In all places where numbers of people are crowded together, a strict attention ought to be paid to cleanliness and a free ventilation.

If fresh air is necessary for those in health, it is still more so for the sick. To them it is the most reviving of all cordials, if admitted into their chamber gradually. Where the sick are laboring under fevers of the typhus and malignant kind, dysenteries, or other diseases of an infectious nature, we cannot pay too great attention to a free ventilation, both for the benefit of the sick and their attendants.

The air of large cities or great towns should be avoided as much as possible by persons in a delicate state; particularly by the consumptive, asthmatic, hypochondriac, and nervous. When unavoidably obliged to remain in the like situations, such persons should go as often as they can into the open air, and keep their houses properly ventilated.

Many are afraid of *night air*. Florence Nightingale replies to this objection by asking, What can we breathe at night except the night air?

Her rule in regard to ventilation of sick-rooms was to "*keep the air which the patient breathes as pure as the external air, without chilling him.*"

If this rule were acted upon, many of our fevers and other diseases would lose much of their terror.

Patients suffering from typhoid fever have been treated successfully *without medicine, by removing them out-doors, under tents.*

Houses surrounded with plantations or thick woods, and those situated in low marshy soils, or near large ponds or lakes of stagnated water, are always unhealthy.

When the weather becomes warm, the muscular fibres are relaxed. When it is cold, they are rigid and contracted, and the power of cohesion is increased, so as to affect even the hardest metals.

The weight of air which our bodies sustain at different seasons is very great. That which presses on the body when the mercury is highest in the barometer is said to be equal to 39,900 pounds troy weight, and, even under the least degree of pressure from the air, is

thought to be equal to 39,820 pounds troy. As the body must sustain so immense and variable a weight, we cannot be surprised that our health should become affected by the changes of the weather, and that frequently in a sudden manner. Air is so closely connected with health and life, that it is impossible for the animal functions to be properly carried on, even by the most vigorous and athletic constitutions, where a due attention to it is treated with indifference or neglect.

METHODS OF VENTILATION.

The first and simplest method of admitting pure air into a room is by *opening the window*.

Letting down the window from the top and putting it up from the bottom, and having an open fire-place, give the foul air a chance to escape and allow the pure air to enter. The foul warm air always rises, and will pass out at the top, while the cool air enters from without. If the window is guarded by shades or blinds, *air can be admitted in this way without causing any unpleasant or dangerous current, both by night and by day*.

A little management and study will enable any one to keep their bed and sitting-room well ventilated in this manner, without exposing even the invalid to the risk of taking cold. But *management and care* cost time and patience, and the majority of people are not willing to pay so high a price.

2. *Houses may be ventilated by constructing them so that the foul air can be expelled through the flues.*

Dr. John H. Griscom, so long and so favorably known to the country as a writer on Hygiene, and as a conspicuous leader in sanitary reform, has introduced a system of *heated flues* through which the foul air is expelled. He claims, that

"To secure a high temperature within a ventilating flue, and to be able to multiply heated flues, are the considerations demanded for the thorough and efficient ventilation of all ordinary buildings."

He also claims that by his method "*sufficient, reliable, and perfectly controllable* ventilation can be secured in dwellings, school-houses, churches, court-houses, stores, and all edifices which are warmed by *hot-air furnaces* of any description. It costs but little, and it can be maintained without expense."

From a "*Report on the Importance and Economy of Sanitary Measures to Cities*," by John Bell, M.D., I extract the following description of Dr. Griscom's method of ventilation:

"It pertains to the 'chemical method,' the motive power of the

air being heat, but requiring no extra expenditure of fuel ; the heat used for the purpose being only the waste heat of the furnace by which the house is warmed. The arrangement consists in the construction of independent ventilating flues in the walls of the house, in proximity to the hot-air tubes, so that the two may be connected together by means of a lateral or branch tube, by which a current of hot air may, at any desired moment, be transmitted from the hot-air tube to the ventilating flue. By this means the ventilating flues, which terminate in the open air like an ordinary chimney, will be warmed by the hot air from the furnace when the ordinary hot-air register is closed, as at night in a dwelling, or in a school-house after school hours.

“ If properly constructed as to shape and material, the walls of a flue will, after a current of hot air has passed through it a short time, become sufficiently heated to rarefy the air within ; thus giving the flue a good ventilating power, even after the current of hot air has been withdrawn. For example, if the hot-air register of a parlor be closed at ten o'clock at night, and the heat, instead of being thrown back into the furnace, is allowed to pass through the lateral tube into the ventilating flue, and so continue till six the next morning, it is evident that, during those eight hours, the interior of the ventilating flue must become thoroughly heated, so that the next day, when the current of hot air is restored to the parlor, the heated sides of the ventilating flue will continue to rarefy the air within them for many hours, and perhaps even days, afterward.

“ There being no danger of a reaction of the air of the flue through the ventilating register (as is the case when ventilating openings are made in ordinary fire-flues), connections with the apartment to be ventilated may be made at any point, and even carried to the opposite side of the house, between the beams of the ceiling, to ventilate distant apartments. Dr. Griscom's method has the advantage of being applicable to all edifices warmed by hot-air furnaces of any description, which, in general, are those most needing ventilation. This arrangement may be introduced into many houses already erected, by connecting the hot-air tubes with such of the ordinary chimney-flues as are not used with fire.

“ One of the principal advantages appertaining to this plan is the capability of having a LARGE NUMBER of ventilating flues put in connection with the furnace. In fact, the number may correspond with the number of hot-air registers, and thus any desirable amount and extent of ventilation be obtained.”

In addition to the advantages enumerated in the foregoing ex-

tract is that of avoiding the danger of fire, incurred by overheating the hot-air tubes when the registers are closed, as the hot air then passes up through the ventilating shaft, instead of being confined below."

Dr. Griscom's method does not admit pure air from without; it simply allows the foul air free exit.

3. The admission of pure air from without is accomplished by the *Ventilator of John Lesperance*. This invention is just now being brought to the public attention as this book is going through the press. The ventilator is so arranged that it can be placed in the window as a substitute for a pane of glass.

Among the advantages claimed for it in the report of the Special Committee of the *New York Association for the Advancement of Science and Art*, are:

"The object of this ventilator is *sevenfold*.

"1st. That air shall be admitted at all times!

"2d. That its course shall be inwards and upwards, transversely, not horizontally.

"3d. That the air shall be divided into numerous streams, so as to make it equally divisible into every part of the place to be ventilated.

"4th. That no suspended organized matter shall pass in with the air.

"5th. That the air in passing through the ventilator be deprived of its carbonic acid and sulphuretted hydrogen gases, the two gases most generally found to predominate in impure air, and most dangerous to animal life.

"6th. That when the air is overcharged with aqueous vapor, a portion of it can be absorbed in the ventilator.

"7th. That the admission of the air will produce no sensible draught.

"Your Committee, after careful examination and mature deliberation, are convinced that the Lesperance Ventilator will perform all that the inventor proposes it should do, and we hail with great satisfaction this addition to science and art, considering that it will be found one of the best means for the preservation of health, and its restoration to diseased bodies, especially in hospitals."

"An adult man in ordinary work gives off in 24 hours from 12 to 16 cubic feet of carbonic acid gas, and also emits an indeterminate quantity of the same gas by the skin. In hospitals, in addition to being vitiated by respiration, the air of the sick-rooms is also contaminated by the abundant exhalations from the bodies and by the effluvia from discharged excretions.

“That the breathing of air rendered impure from any cause is hurtful, and that the highest degree of health is only possible where, to other favorable conditions, is added that of a proper supply of pure air, might be inferred from physiological evidence of the paramount importance of proper aëration of the blood. Experience strengthens this inference; statistical inquiries on mortality prove beyond a doubt, that of the causes of death which usually are in action, *impurity of the air* is the most important. Indeed, observations confirm this. The air must be removed so immediately that there shall be no risk of a person breathing again his own expired air, or that of another person. In hospitals, especially, it is desirable that there shall be no chance of the air of one sick person passing over the bed of another; therefore the movement of the air should be rather vertical than horizontal; and as the expired air and all the exhalations from the body or bedclothes at first pass upwards from their rarity, it is desirable that they should be discharged above, and not drawn down again, past the patient.”

Speaking of ventilation, Mr. Parkes says :

“In order to keep air in its necessary purity it must be continually changing. Whatever way the air is supplied, certain conditions must be laid down : the air which enters must itself be pure, its movements must be *imperceptible*, otherwise it will cause the sensation of draught and will chill. It must be well diffused all through the room, so that in every part movement shall be going on; in other words, the distribution must be perfect. A moving body of air sets in motion all air in its vicinity; it drives air before it, and at the same time causes a partial *vacuum* on either side of its own path, towards which all air in the vicinity flows, at angles more or less approaching right angles.”

Mr. Parkes gives a description of the many modes invented for the transmission of pure air into buildings, but does not seem to have much confidence in any of them. Some of them are clumsy and useless, and many very expensive. Amongst the many are drilling holes in the panes of glass; having two panes, the outside open in the bottom, the inside in the top, the air to pass between the two panes; tubes passing into the room and perforated; air passing round hot steam pipes; pieces of board constructed in the upper part of the window, to direct the air inwards and upwards; fine wire screens, &c., &c., &c.

ACTION OF THIS VENTILATOR.

The ventilator is thus described in the inventor's own words :—

“As the air in my ventilator has to pass through three plates

of perforated tin, a covering of sponge, and a box filled with charcoal, it is impossible that any suspended organic matter can pass through it, and, when necessary, a portion of damp in the air is absorbed and retained in the sponge in the first chamber, and all impure gas is absorbed by the charcoal in the second chamber. The air is rendered warm, *first*, by the amount of friction it has to undergo; *secondly*, by being deprived of its watery vapor; and *thirdly*, by the chambers through which it passes being warmed by the heat of the room."

DESCRIPTION AND EFFECT.

"From the formation of the ventilator, the air passes upwards and inwards, *vertically* and not *horizontally*; therefore there can be no sensible draught; and as it passes through three plates of perforated tin, it is divided into numerous streams, and is discharged into the room, like water from a fine rose on a watering-pot, in continuous streams. It may be objected that my theory, although good when there is an abundance of wind, would not prove equally so when there is little or no wind stirring; but where the wind is said to be still, it travels at the rate of one mile and one-half per hour. Even then there is a stream of pure air admitted, being drawn in by the heat of the chamber or house to be ventilated, on the principle that heat draws the current of air towards it. This fact every one knows by observing in winter, when he opens the small pane of glass (called a ventilator) in his window. It is the cold air that rushes in, not the hot air that rushes out. Of course, if a double current is established, the hot air will rush out as it is displaced by the cold. Ventilation, however, should be on every side of a house, but even when it is not, there will always be a current of air through the ventilator."

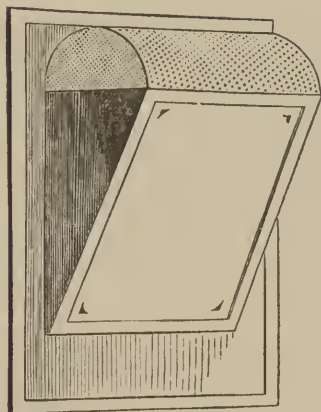
MANNER OF USING THE VENTILATOR.

"In every private house there should be one large or two small ventilators in every large room, particularly in bedrooms. In hospitals, barracks, schools, prisons, &c., there should be one large or two small ones for every twelve persons in the daytime, and in the sleeping-rooms, one for every eight persons sleeping therein. In prisons, one large ventilator should be in each cell. The ventilator should take the place of one of the highest panes of glass in the window, care being taken that no obstruction is allowed to prevent the easy withdrawal of the box of the ventilator; when necessary to do so, to dust it once every day. The box of the ven-

tilator will of course face the inside of the room. Where double windows are used, the tunnel takes the place of the corresponding pane of glass to that in which the ventilator is placed, and the tunnel drawn out to cover the mouth of the ventilator. When necessary to deprive the air of part of the aqueous vapor (damp), the sponge must be placed in the vacant chamber under the box; and should the wind blow very strong and cold, direct on the mouth of the ventilator the piece of red flannel must be placed over the top of the box. At other times it hangs down uselessly. When the air is not over wet, the sponge should not be used. As stated above, the box of the ventilator, as well as the whole of the ventilator, should be dusted daily.

“When the ventilators are used for railroad cars, they must be in the cars. Their size will depend upon that of the car. Four ventilators, *one facing each end* and *one on each side*, as shown in the model, will be sufficient. It will be at once seen that only two ventilators admit air at the same time. The tubes for the escape of foul air generated in the cars *must be below* the ventilator, otherwise the fresh air, as well as the foul air, would pass through, and the object intended to be obtained would be lost. By my plan the fresh air displaces the foul air, and forces it out through a perpendicular tube eight inches in diameter, placed in each corner of the car; these tubes are carried through the top of the car, and are mounted with a cowl turning on a pivot, to prevent the wind blowing down. Into each of these perpendicular tubes six horizontal tubes, 4 inches in diameter, enter, as shown in the model. This gives 24 inch tubes to carry off the foul air, which is certainly sufficient for sixty persons.

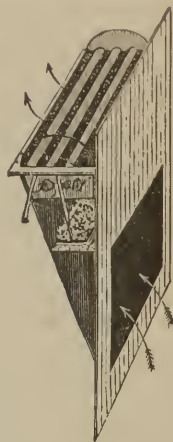
“When the cars are in motion, only two of the ventilators are in actual use, namely, the one in front, and the one in the side with the funnel towards the locomotive; the keys of the other two should be turned. The sponge should be always in use on railroad cars, but the piece of flannel will not be necessary. If the wind blows very strong and cold, the keys may be used to regulate the admission of the fresh air. Every builder of a car may arrange these ventilators to suit his own taste; he may beautify them and make them as expensive as he pleases, but in all cases *the principle* must be adhered to, *i. e.*, the ventilators must be *inside* the car, as high up as it is possible to place them, and the escape tubes must be *below* the ventilators, *yet not as low as the heads of the persons sitting in the cars.*”



LESPERANCE VENTILATOR.

External view.

This Ventilator may take the place of a pane of glass.



LESPERANCE VENTILATOR.

Interior view.

The arrows indicate the direction of the air, through the charcoal and wire gauze, into the room.



CIRCULATION OF AIR IN ROOM.

Advantage of fireplace illustrated. The warm air, being lighter, rises to the top of the room, and the cold air falls to the bottom.

(From Lee's work on Ventilation.)

ADVANTAGES.

"In conclusion, I have no hesitation in stating that I find from experience that the ventilator, placed in any building according to the directions given, will ventilate the building with fresh pure air without producing any sensible *draught*; and as the same principle is applied in the adaption of it to railroad cars, if it is used in the manner pointed out, and as shown in the model, the car will be thoroughly ventilated without any sensible draught."

EFFECTS OF ANTHRACITE COAL ON THE HEALTH.

Nearly all nervous persons who have lived much in close rooms heated by coal have observed a feeling of depression, headache, or other unpleasant symptoms, which they have attributed to the stove or furnace.

Recent experiments have shown that *carbonic oxide* escapes from our stoves, as ordinarily manufactured. It is claimed that this *carbonic oxide* is exceedingly deleterious to the health. It is even asserted that there is among us a *separate, special disease* caused by this poison.

It was once supposed, and is now the general belief, that these unpleasant sensations are the result of *the dryness of the air*. But according to the experiments of Dr. George Derby, of Boston, who has written an excellent treatise on "*Anthracite and Health*," this opinion is erroneous. He contends that "*iron heated to any point possible in our furnaces has no power to abstract moisture from the air.*"

He contends, furthermore, and with a great array of evidence, that *dry air* is healthier than *moist air*. His conclusion is, that "*no artificial evaporation whatever is required on the score of health.*"

General Morin, of France, has made elaborate experiments, which go to show most clearly that *carbonic oxide* escapes from our cast-iron stoves and diffuses itself through the atmosphere. His view is, that the headaches and general uneasiness and distress that we so often experience when confined in rooms heated by cast-iron or sheet-iron stoves are caused by the presence in the air of this *carbonic oxide*.

His experiments consisted in chemical examination of the air around the heated stoves.

The remedy proposed is to make furnaces "*of wrought-iron plates riveted together tightly, as those of a steam-boiler, so that the whole apparatus shall be practically of one piece.*"

LOCATION OF HOUSES.

Whatever may be the temperature of the climate, the air, generally, may be considered healthy, if pure and clear, and occasionally visited with the agitating and renovating power of the wind. On the other hand, an air that is gross, or strongly saturated with animal, vegetable, or mineral substances, is highly injurious to all.

In the selection of a residence with a view to health, preference should always be given to an elevated situation, which is neither exposed to extreme heat in summer, nor to piercing cold in winter. The rooms should be lofty, and of suitable dimensions. Low, confined ones are injurious. (See views of Dr. Bowditch under *Consumption*.)

The air of any place is salubrious where the water is good, and where this is pure and tasteless, the air, in general, is free from any offensive smell. Where sugar readily enters into a dissolved state spontaneously, the walls of the house are stained and changed in color, the papering loose and detached, and metals acquire rust or verdigris on their surface; these are presumptive evidences that the situation is damp, and therefore unwholesome.

The higher parts of a house are generally the most healthy. All the rooms in a house should be daily ventilated by the seasonable admission of air for a sufficient length of time.

By immoderate warmth, either in sitting-rooms or sleeping apartments, with doors and windows made what is called air-tight, the body will become enervated. To avoid indisposition from this cause, it may be stated as a general maxim, that the temperature of a sitting-room should not exceed 60 degrees of Fahrenheit's thermometer, nor that of the bedroom 50.

As the warmer weather is progressively succeeded by a state of greater cold, we should inure ourselves to the effects of these changes. By these means, if we use moderate exercise, and are properly clothed, we shall neither feel the cold unpleasant, nor will it cause any obstruction of the necessary perspiration.

MUSCULAR EXERCISE AND RECREATION.

About thirty years ago the attention of physicians and of society in general, was called to the fact that new forms and phases of nervous diseases were arising, and that old and familiar nervous symptoms that had been quite rare were increasing in frequency

It was found that neuralgia—a name hardly mentioned in the earlier part of the present century—was becoming popularized in nearly every household; that dyspepsia, instead of being an occasional and exceptional malady, was rapidly becoming fashionable, especially in the circles of the wealthy and cultivated; and that hysteria and hypochondria—maladies of dark and ugly significance—were spreading through all ranks and classes, like some mysterious contagion. At the same time, it began to be observed that inflammatory diseases were rather less frequent and less violent. About the same time also—partly on account of the manifest changes in the type of disease, and partly as a result of a better knowledge on the part of the profession—a revolution began to be wrought in the treatment of disease. *Bleeding and calomel gave way to tonics and stimulants.* About this same time also a number of well-known writers began to publish works on the laws of health, in which literary men especially were exhorted to *exercise* furiously in order to work off and cure the nervous diseases to which they were liable. The cure for the physical maladies of the human race was to be found not in taking away the little blood that remained in the exhausted invalid, or in confining him in a dark room on a starving diet, but in long walks before breakfast, in climbing high mountains, in protracted rides on horseback, and in furious gymnastic exercises with clubs and dumb-bells. It is always the tendency of ambitious patients to go ahead of what they are advised to do. Tell them to walk one mile a day, and they will walk twain. Tell them to exercise gently a few moments before breakfast, and they will very likely perform violently with dumb-bells, or at the wood pile for an hour, and thus secure far more injury than benefit.

As a result of the teachings of which I have spoken, numerous errors, both in the theory and in the practice of physical exercise, have arisen, not only among the students, but among teachers and professors—errors that are of a serious character and of which they will in time become convinced by experience, even though no one should attempt to point them out.

1. *It is an error to suppose that we need great muscular strength.* Long ago the philosopher Seneca wrote that a scholar should not pride himself on length of arm or breadth of back. This remark of the old philosopher was unconsciously based on sound physiological principles.

I desire that my precise meaning on this subject should be clearly understood. All classes need a certain amount of muscular exertion, and should make it a duty and a pleasure to engage every day in some exercise that will call the muscles into vigorous activity.

But the increase of the size of the muscles should not be the *leading aim* in the exercise of students. It is well and necessary that we should obtain a good muscular development, but it should be an incidental and unconscious result of our exercise rather than its special distinct object. We should not in our exercise be all the time on the watch, as to whether our muscles are growing firmer and larger. When we seek to develop the intellect, we do not stop each moment in the midst of our studies to measure our heads to see how the brain grows; no more should we stop in the midst of our exercises to see how our muscles are developing. The best way to develop the brain is to regularly pursue a variety of studies adapted to our tastes, and let the growth take care of itself. Just so, the best way to develop the muscles is to regularly pursue a variety of exercises, adapted to our tastes, and let the muscles grow or not as they choose.

Again I say that muscle is not always health. A man may have fearful flexors and extensors, may be the champion at the dumb-bells and on the race crew, and yet have a weak nervous system and be utterly incapable of protracted study or thought. The worst cases of nervous exhaustion that I meet with in my practice are oftentimes in men of large frames and powerful muscles.

2. *It is an error to suppose that gymnastics, or bowling, or billiards, or ten-pins, or any form of in-door exercise, can compensate for the lack of out-door air and sunlight.* These three—air, exercise, and sunlight—are all great physicians, but the greatest of them is not exercise, but air. Sunlight itself is a more potent healer than mere muscular exercise. A passive life in the open air is more healthful than an active life under cover. In the severest weather, and when time is limited, it is convenient to resort to the exercises of the gymnasium, the bowling-alley, or the billiard-room, and yet we are all of us too much afraid of stormy weather. The worst seasons for walking are not in the midst of a storm, but just *before* a storm is coming on. For twenty-four hours or more before a north-east storm reaches us the atmosphere is usually in a bad electric condition. (See *Atmospheric Electricity*.) This fact has been long and painfully known to nervous invalids, and has recently been confirmed by careful observations with the electrometer both in this country and in Europe. On the other hand, while the storm is actually raging about us the atmosphere is frequently in a good electric condition. The depressing heat of summer is the only atmospheric condition which, in our climate, ought to prevent us from exercising in the open air. Air and sunlight are the best remedies we know of for consumption and general nervous debility. Sunlight

possesses mysterious and subtle chemical virtues that give it a great power over the nervous system. Our first choice of exercise should therefore be those methods which, like walking, climbing hills and mountains, and out-door games, can be taken in the open sky and under direct exposure to the solar ray.

3. *It is an error for sedentary or feeble persons to take very violent or exhausting exercise of any kind.* For a brain-worker to attempt to concentrate a large amount of severe exercise in the shortest possible time, is unphysiological and absurd. Therefore straining at heavy dumb-bells, protracted running, and especially the so-called "spouting" of boat-racing, are to be unsparingly condemned.

A few years since Dr. Winship excited not a little attention by his wonderful feats at lifting heavy weights. The influence that his example has exercised, even among the intelligent classes, is another historical illustration of the great injury that even a weak and ignorant man may accomplish who sincerely believes his own errors. Even if the chief object of college education were to train up a race of pugilists, the system of Winship would not be a good method of accomplishing it.

Boating is a method of exercise that has many advantages. It is pleasant, congenial to the tastes of a large number, sufficiently active, and must be pursued in the open air.

In our country, boat-racing is of such recent date that we have not yet had opportunity of testing its special effects on the heart, on the general health, or on longevity.

4. *It is an error to make exercise a duty rather than a pleasure.* "Of all remedies for the nerves," says Jean Paul Richter, "enjoyment is the most powerful." As a rule, food which is best enjoyed is best digested. Just so exercise which is most agreeable is usually the most beneficial. In selecting methods of exercise, every individual should be guided by his own individual tastes. It is better to change frequently from one form of exercise to another. It is well even to consult our whims and our varying moods. Above all things we should strive to prevent our exercise from becoming a dry, hard, mechanical routine. The heart should go with the muscles. Those who are constitutionally nimble and athletic enjoy gymnastic exercises, and within certain limits are benefited by them; while those who are feeble, nervous, and awkward positively dislike them, and should by preference select amusements in the open air. The delicate and nervous should remember that excessive exercise must weaken rather than strengthen them, especially if it be un congenial. Let such always leave off before they are exhausted. Let them not confine themselves to any one method or system, but ring

the changes on all, as their fancy may direct, and when they are too wearied for active exertion, let them, by an easy stroll under the open sky, seek the beneficent and grateful aid of the two greatest of physicians—*Air and Sunlight*.

5. *It is an error to neglect all exercise.*—To some it may appear strange that I have not placed this first in my catalogue of errors; but in these days there are, I hope, very few who need exhortation to the *general* duty of physical exercise. I have rather assumed that all my readers were conscious of that duty as they were conscious of the duty of virtue, and needed only suggestions and guidance, so that they might best use without abusing the rich variety of exercise of which in these days they are now availing themselves.

Best Times for Exercise.—It is better, so far as possible, to take our exercise in the daytime than at night. At night the electric condition of the atmosphere is not usually so favorable as in the greater portion of the day. Then again, those who exercise after dark lose the healthful influence of sunlight. The evening—just before the hour of retiring—is a good time for light gymnastics, for those whose duties are so pressing that they cannot devote a portion of the daylight to out-door exercise. The general rule should be to take out-door exercise in the daytime, and in-door games and gymnastics in the evening.

Except in the hottest weather, the middle of the afternoon is the best portion of the day for exercise for students and literary men.—This is, as has been said, a bad time for study, and for that reason it is well to improve it for the purpose of physical recreation.

The forenoon—between nine and one—would be the best time for exercise of the muscles, as it is for activity of the brain, if the object of life were to make pugilists and athletes, but those who desire to make the most of intellectual culture should devote the best part of the day to study. Physical exercise for students is a means and not an end, and should, with occasional exceptions, be taken at the times when we are least fitted for study.

The worst time for exercise is early in the morning, and before breakfast.—The errors that prevail on the subject of early morning exercise are simply monstrous. Even the strong and athletic are liable to injure themselves, by exercising long and vigorously in the early morning on an empty stomach; while the delicate, the dyspeptic, and the nervous should not allow themselves to indulge in any unstained activity of brain or muscles until the system has been fortified by at least a preliminary breakfast. *Farmers sometimes injure themselves by working too hard and too long before breakfast.*

Moderate exercise, such as walking, the lighter forms of gymnastics

tics and easy games, can be taken indiscriminately just before or just after meals, without injury ; but the severer tasks—rowing, active games—should usually be reserved for the middle of the forenoon or afternoon, or for the evening. It is not well to go to our meals in a condition of exhaustion, either of the brain or of the muscles. It is not well to be over-fastidious about exercising just after meals, for our own feelings will usually guide us aright. After a hearty meal we do not care to plunge into the severest work.

Quantity of Exercise.—It is as impossible to give mathematical rules for the amount of muscular exercise to be taken, or for the time that it should occupy, as it is to prescribe the weight of food we should take, or the number of hours of sleep we should indulge in. The question of time and quantity must be settled by the tastes, the constitution, and the experience of each individual. There is one general rule by which we may all be guided—and that is, to stop short of exhaustion.

Riding Velocipedes.—It is proper that I should here speak of a form of exercise that is now exceedingly popular—*riding velocipedes*. This is about the only method of exercise of which I cannot speak from extended personal experience. My impressions are decidedly in its favor. It seems to me, judging from the few trials I have made, from observation of the subject in the public rinks, and from inquiries of those who are masters of the art, that it may appropriately be compared with skating, which, as we all know, is a most excellent form of active exercise.

Like skating, it requires practice in the art of balancing. Like skating, it is attended with the exhilaration of rapid movement. Like skating, it can be taken in the open air. Like skating, it pleasantly exercises the whole system, and at the same time, unconsciously to ourselves, it sufficiently develops the muscles. Like skating, also, it is sometimes attended with unpleasant and even serious accidents. The fact that occasional ruptures or bruises result from skating or riding velocipedes, ought not, I think, to lead us to indiscriminately condemn these amusements. Accidents and injuries—even of a serious character—are liable to occur from nearly all forms of active exercise—gymnastics, bowling, and foot-ball.

Riding velocipedes has this advantage over skating, that it can be taken at all seasons of the year. If it is to become a permanent amusement in the country, the rinks should be so constructed that they may be both open to the sunbeams and protected from storms.

In every stage and state of life, exercise is necessary for our welfare and health ; and it is equally requisite for the female as for the male. By food our bodies may be nourished ; but if not assist

ed, by due exercise, to carry on digestion with advantage, and to help in throwing off the superfluous humors by perspiration, we must unavoidably feel all the inconvenience of repletion and fulness in the blood-vessels, while, at the same time, the body will be afflicted with many painful diseases.

Indolence, moreover, not only occasions diseases, and renders men useless to society, but promotes all manner of vice. Indolence, when indulged, gains ground, and at length becomes agreeable. Hence, many who were fond of exercise in the early part of life become somewhat averse to it when more advanced in years. Idleness may well be said to be the root of many evils. On the contrary, a life of activity and industry of brain and of muscles is not only the greatest promoter, as well as preservative of health, but likewise the best guardian of virtue.

The tendency with many of our farmers, laborers, and mechanics is to use their *muscles too much* and their *brains too little*. They should devote their leisure every day to literature, to history, and to popular science. The world is now filled with books that are *interesting* as well as *instructive*.

The eight-hour law will be a curse to society if it does not tend to increase the amount of brain-work among our laboring population.

Horseback riding, playing croquet, riding velocipedes, skating, rowing, playing base-ball, pitching quoits, foot-ball, walking, running, jumping, gymnastics (Indian clubs, dumb-bells, &c.)—all of these are good methods of exercise. It is well to try them all when opportunity offers, provided we can enjoy them. It is not well to place too exclusive dependence on any one form of exercise. As soon as we get tired of one style of exercise it is well to try another.

I am fully aware that this work will be read by many who labor with *their muscles* all the day, and who need *none of these methods of muscular amusement*. Such persons need to exercise their brains in order to rest their muscles.

Let them read and study in the evening.

(For more detailed remarks on exercise and illustrations see *Gymnastics and Movement Cure*.)

SUNLIGHT.

The effects of sunlight are observed in the animal even more markedly than in the vegetable creation. It has been demonstrated by experiment that animals whose natural color is white will present an entirely different hue and appearance if reared in darkness.

That the development of tadpoles can be retarded by confining them in dark vessels has been sufficiently demonstrated by the experiments of Edwards and Hammond. The fish found in the Mammoth Cave have no sight, because the development of the eyes is arrested by the absence of light. Sir Humphrey Davy in his "Salmonie, or Consolations of Travel," describes the *Proteus Anguinus*, found in the grotto of Madalene, in Illyria, several hundred feet below the surface. He represents them as pale, slender creatures, almost transparent in their natural condition, but gradually becoming of a darker color when they are brought to the light. They have no eyes, but in their place two small dots.

Sunlight also penetrates the sea to the distance of several hundred feet, and the fish are as susceptible to its influence as are the animals that move on the earth, or the birds that fly in the air. All the varieties of fish live near the surface of the ocean. All observation shows that even the lower orders cannot live at very great depths. The great majority of fishes move within a few hundred feet of the surface, and only the lower orders are found below 100 fathoms. These facts have been abundantly demonstrated by the investigations of Professors Forbes and Bailey, and Lient. Brooke.

On man the influence of sunlight is as direct and positive, and far more perceptible than on the lower forms of existence, although he is by nature endowed with greater power of resisting external influences. The merest tyros in hygiene know that children brought up in dark cellars, in gloomy attics, or in any of the dismal corners of a great city, look paler and flabbier than the offspring of the same class of parentage in the country, who, though equally poor, and just as meagrely fed and clothed, are yet allowed the free range of the fields and meadows. Even the children of the better classes in our large villages, who have abundance of nutrition and all the comforts and luxuries of civilized life, are not unfrequently kept pale and thin by forced confinement, until maturer years and emancipation from school discipline allow them opportunity to enjoy the air and the sunlight.

Sunlight discolors the skin in proportion to its intensity, and the length of time to which the body is exposed to its influence. Country people are of a browner cast than the non-laboring classes of the city, although they are not always or necessarily in a better physical or mental condition. Savages who have no abiding place and no permanent shelter from the elements, are of a deeper shade than civilized nations who inhabit the same zone. But among the civilized and the savage it is observed that the parts that are most exposed to the sun—the neck, face, skin, and hands—are darker than

the rest of the body, that is mostly covered by some form of garment. In the polar regions, where there is almost perpetual day, either from the direct rays of the sun, or from the reflection of the aurora borealis on the fields of ice and snow, the inhabitants are almost as brown as some races that reside near the tropics.

That the rays of the sun have a distinct chemical effect is proved by a number of special experiments. Pharmaceutical preparations undergo greater or less changes, if the bottles in which they are contained are kept for a length of time exposed to the rays of the sun. "If camphor is kept in a bottle, crystals will be formed on the side of the glass upon which the light falls. If that side is turned from the light the crystals will be gradually removed, and again be deposited on those parts upon which the rays of light first impinge."

It has been ascertained by the experiments of Mr. Hunt, that when the sunlight is transmitted through media of different colors, the growth of plants is variously modified. "Under glasses of an orange, yellow, red, or ruby color, the roots of tulips exhibited some vitality, and in some cases buds appeared. Underneath the green glass the plant grew slowly but strongly. The flower-buds generated under these circumstances never could be made to blossom, notwithstanding the greatest care and attention bestowed upon them."

But the investigations of science have not stopped here. By means of the spectroscope, Professors Bunsen and Kirchhoff have even presumed to analyze the sunlight by the prism, and they have found that it contains various metallic substances, such as iron, nickel, barium, copper, and zinc. They account for the presence of these metals in the rays of the sun by supposing that, in their passage to the earth, they have passed through vapor containing them.

Most of the savage and wandering tribes make their home in the sunlight, and need no instructor; but the child of civilization, who lives beneath the shelter of thick walls, in rooms agreeably warmed and lighted by the skilful appliances of art, should make the enjoyment of the open sky a study and a duty. In these latter days we have made such astonishing advances in the methods of producing artificial warmth and light, that we forget the great natural source of these comforts, and ignore the fact that the sunlight possesses many subtle chemical virtues that are essential to animal or vegetable life, and which exercise a mighty and perpetual influence on the health, the life, the beauty, and the character of humanity, which thus far has not been clearly understood by the genius of science, nor in any way supplied by the resources of modern art.

We act, indeed, as if we were afraid of the sunlight We not only fly from its presence under cover of high, dark walls, but we close our doors, darken our windows with gloomy blinds and thick shades, as if it were our enemy and were perpetually besieging our houses, in order to force an entrance and destroy us by some terrible plague. No walled town, surrounded by armed foes, was ever so vigilantly and perseveringly defended as our own modern homes against the invasion of sunlight. Into the majority of our city dwellings and churches the sunlight, with its direct rays, scarcely ever enters.

The world over, country people are more hospitable than city people, and this is no less true in regard to the sunlight. But even our rural cottages are often encompassed by thick ranks of shrubbery, and high trees, armed with long, heavy branches, to protect the family mansion from one of the best friends God ever sent to his suffering creatures.

When the fair sex venture forth from their poorly ventilated and sun-excluded dwellings, how cautiously and jealously they shield themselves against the sun's rays, by the heavy shawl, the thick veil, the parasol, and the tightly fitting glove; and that too on the mildest and loveliest days of the year—as far as possible making themselves proof against those genial influences to which they are indebted, not only for health and life, but also for the delicate hues of beauty which they prize so highly.

We ride out to “take the air,” in covered vehicles, from which the sunlight is excluded almost as effectually as from our darkened chamber at home. We draw our infants in little carriages, but shield them from the rays of the sun, which they never see at home, and which is almost as essential to their perfect health as pure air itself. And, worse than all, when this unnatural deprivation of the influence of the great source of health, and life, and beauty has induced disease that renders it impossible to go out beneath the open sky, one of the very first steps taken is to make the dark chamber of the invalid still darker by tightening the blinds and drawing lower the shades, as if it were desired to test, to the utmost, the recuperative forces of nature against all the appliances of art.

The beneficent influence of sunlight should be studiously considered in our treatment of the sick, especially those afflicted with the so-called nervous disorders. *Dyspeptics, rheumatics, paralytics, and sufferers from neuralgia* and other nervous diseases, do well to take frequent and protracted *sunlight baths*. The rooms of the invalid should be flooded with sunlight, and the entire surface of the body should be systematically and thoroughly exposed to it. If

these principles were understood and acted upon by the profession and the laity, the ratio of nervous symptoms would largely decrease, and nature would experience far less difficulty in curing her afflicted children.

From Dr. Winslow's excellent work I quote as follows :

"Fourcault affirms that where life is prolonged, perhaps to the average term, the evil effects of the want of light are seen in the stunted forms and general deterioration of the human race. It appears that the inhabitants of the arrondissement of Chimay, in Belgium, three thousand in number, live partly as coal-miners and partly as field-laborers? The latter are robust, and readily supply their proper number of recruits to the army; while among the miners it is in most years impossible to find a man who is not ineligible from bodily deformity or arrest of physical development.

"In the spring a potato was left behind in a cellar where some tools had been kept during the winter, and which had only a small aperture at the upper part of one of its sides. The potato, which lay in the opposite corner, shot out a runner which first ran twenty feet along the ground, then crept up along the wall, and so through the opening by which light was admitted.

"This fact is observed in the *etiolation* or blanching, as it is termed, of certain kinds of vegetables, such as celery, sea kale, endive, &c. Their leaves, deprived of the sun's rays, do not attain their normal growth or form, neither is the natural odor of such plants fully developed.

"Professor Robinson, descending into a coal-mine, accidentally met with a plant growing luxuriantly. Its form and qualities were new to him; the sod on which it grew was removed, potted, and carefully attended to in his garden. The etiolated plant languished and died; but the roots speedily threw out vigorous shoots, which, from the form of the leaves and their peculiar odor, he readily recognized as tansy. He repeated similar experiments upon other plants, viz.: lovage, carvi, and mint, with analogous results."

Of the influence of moonlight, Dr. Winslow thus expresses himself:

"It is curious to trace the effects of sol-lunar influence upon the return and progress of maniacal paroxysms. They generally begin immediately after the summer solstice, are continued with more or less violence during the heat of summer, and commonly terminate towards the decline of autumn. This duration is limited within the space of three, four, or five months, according to deficiency of individual sensibility, and according as the season may happen to be earlier, later, or unsettled as to its temperature. Ma-

niacs of all descriptions are subject to a kind of effervescence or tumultuous agitation upon the approach of stormy or very warm weather. They then walk with a firm but precipitate step; they declaim without order or connection; their anger is roused by trivial or imaginary causes; and they express their feelings by clamorous and intemperate vociferation.

"It is a well-established fact that insanity is a disease of the mind, upon which the moon exercises an unquestionable influence. The new moons and the last quarters of the moon are the lunar phases which influence the insane most frequently and painfully.

"The first quarters and the full moons are the phases which I have observed to have the least influence in inducing relapses of insanity—the insane at these periods being less insane and quieter, and they reasoned almost as if they were not ill at all. Those who are still susceptible of being cured, as well as those who have been cured, are precisely those upon whom the two most powerful lunar phases have had the greatest influence during the whole of their illness.

"Those who are acutely maniacal are much more susceptible to the influence of the lunar phases than others."

Dagnin says: "I have also observed a difference between the influence exerted by this satellite on madness characterized by excessive joy, and that by sorrow and melancholy. It is proved that this influence is much more marked in parts of the countries bordering on the sea than in those at a distance from it."

We have not yet spoken of water as one of man's best physicians. Water is composed of oxygen and hydrogen, in the proportion of eight parts of the former to one of the latter. We have seen that atmospheric air is the result of a mixture of oxygen and nitrogen; water, on the contrary, is the result of a chemical combination of its two elements, oxygen and hydrogen, so that there is produced a substance entirely different from either.

Those who have not studied the subject may be surprised to learn how universal and abundant water is when compared with other substances. It covers three-fourths of the surface of the earth, and constitutes much more than half the weight of animal and vegetative life. There is water in the atmosphere, even in the driest season; water is carried by the gentlest zephyr as well as by every stormy wind that blows. There is water in the hardest of the woody fibres, in the most shrivelled barks on the trees, in the thinnest leaves and in the most delicate flowers. Water forms three-fourths of the human body. It is found in the hairs, in the tough cartilage, in the hard bony tissue, and even in the dense, pearly teeth. Water

impregnates and saturates nearly every substance on the face of the earth, so that there is scarcely an article of furniture or adornment, of food or apparel, that would not weigh less when thoroughly, absolutely dried.

The uses of water are as varied as its presence is universal. It is nature's great chemist, and is invested with power to dissolve a large number of other substances, and yet it does not irritate the animal tissues of which it forms a part. On the other hand, the powerful solvents that man has sought out and contrived are more or less painful if not destructive to animal life.

Water is also the great cooler of the world. It possesses a greater capacity for taking up heat than any other substance. For this reason it is always cooler in the neighborhood of the sea-shore, or on the borders of lakes, pools, swamps, and rivers. When water is evaporating its capacity for heat is much greater than when it is in a liquid state. Hence the evaporation from the lungs and skin is a cooling process; for this reason those whose lungs are so feeble that they cannot take full breaths, or who do not perspire freely, always suffer intensely in hot weather, or after severe physical exertion.

The delights of the sense of taste are largely dependent on the solvent power of water, and, as a rule, all the most luscious and highly prized meats, and fruits, and plants are chiefly composed of liquids. Water is also a powerful absorbent of gases, both the good and the bad. Within a few hundred feet of the surface of the sea, where most of the fish are found, there is always present a sufficient amount of oxygen to meet their wants.

Water is rarely or never found in a state of absolute purity. The water of the ocean is one-thirtieth part solid matter, including the salts of potassium, sodium, calcium, and magnesia. The waters of rivers, lakes, and springs all contain more or less solid material that they take up from the soil through which they pass. Rain-water, the purest of all, usually contains more or less traces of nitric acid and ammonia that it has derived from the air in its passage through it. Pure water, which can be only obtained by distillation, is quite insipid, because it contains no solid matter that we are accustomed to taste in our ordinary drinking water.

In view of the universality of water and the variety of uses to which it is applied, its hygienic and therapeutic importance is at once suggested. Water should be drunk freely during our meals, or after them, or in the intervals, just as the natural thirst demands. There are those who have advised to abstain from drinking entirely until we have eaten the solid articles of our meals. The advocates

of this theory base their argument chiefly on the fact that our domestic animals never drink while they are eating. There is no absurdity to which we may not be led if we take the lower animals as our guides in the study of hygiene. Any enlightened man will find his own natural appetite, under the guidance of reason and experience, a far safer adviser than the entire animal creation. Iced water at meals is a most unnatural drink, especially when not combined with hot tea, coffee, or spirits. It lowers the temperature of the stomach, and thus impedes digestion, while tepid or warm drinks, by their solvent and gently stimulating power, have a directly reverse effect. Cool waters from deep wells are always to be preferred to iced drinks, not only during meals but at all other times, even when the stomach is absolutely empty.

SLEEP.

From *fifteen to twenty hours* is as long as the average of men can keep in activity without an interval of absolute rest. After we have become wearied of study and thought, wearied of muscular exercise, wearied of social life, and of every form of recreation, there comes in every twenty-four hours a time when we feel the need of more perfect rest than can possibly be obtained by any variation or change of activity. Nature meets this great need by allowing us to sleep.

Sleep is food for the brain. It is not positive nutriment like our ordinary food, but in a necessary or negative sense it is really nutritious, for it retards the changes of tissue in the brain, and thus in a measure takes the place of food. It slows the fires of the system, and therefore diminishes the consumption of fuel. In sleep, the system, to borrow a nautical phrase, "goes under one bell."

Sleep is the most absolute form of rest that the system is capable of, and yet it is far from being perfect. The brain, the muscles, and the vital organs are never perfectly at rest, even in the soundest sleep. Even though the interval between retiring and rising is passed in blissful unconsciousness, yet changes of tissue are incessantly going on in every organ and in every fibre. In the soundest sleep of which we are capable, still beats the heart with its mighty and rhythmical pulsations; still courses the blood through all its myriad channels to every organ and molecule; still rise and fall the lungs, harmonious with the throbbing of the heart; still go in the complex processes of digestion and assimilation, of absorption and secretion, of waste and repair; still are maintained, with constant though diminished activity, those unnumbered processes of vital chemistry, which eye hath not seen nor ear heard, neither hath it en-

tered into the heart of man to conceive ; and what is more wonderful and marvellous than all—still are elaborated in the brain, with constant though irregular activity, the functions of memory and imagination, of emotion, fear, apprehension, sorrow, and joy—of every faculty of the human intellect, except the gift of reason and the might of will.

The intellect is never perfectly at rest. In the soundest sleep the brain is ever busy with those unguided and erratic fancies and activities which we dignify by the name of dreams.

State of the Circulation in the Brain during Sleep.—It is yet a matter of dispute what the state of circulation is during sleep. Probably there is more or less relative anemia, or bloodlessness ; but the real physiology of sleep is not yet fully understood. It is certain that remedies such as bromide of potassium tend to diminish the quantity of blood in the brain, and induce sleep.

Though sleep is not perfect rest, it is yet the best that is allowed to mortals, and when taken in sufficient quantities is sufficient for the wants of the system. Its laws are therefore worthy of careful study.

Our mechanics and laborers, as a rule, have less than students and literary, professional, and business men. The majority of our artisans and day-laborers are obliged to commence work by seven o'clock in the morning, and therefore find it necessary to rise by five or six. Many others are obliged to walk or ride several miles to their places of labor, and must therefore have breakfast long before the brain-working classes are out of bed. Farmers are compelled to rise early in the busy season of the year, and oftentimes they are accustomed to work hard and long before breakfast. It is true that the classes here mentioned oftentimes go to bed somewhat earlier than students, or literary and professional men, but their habits in this respect are by no means uniform. Thousands of our artisans and mechanics spend their evenings in amusement or dissipation until nearly midnight, or even later, and after five or six hours of sleep start again to their daily tasks.

On the other hand, about all classes of brain-workers—merchants, bankers, lawyers, clergymen, men of letters, teachers, and students—are, with some exceptions, accustomed to lie in bed until six, seven, and eight o'clock, although they retire, on the average, before eleven. Thus they get from seven to nine hours of sleep, or at least pass that time in bed ; while their subordinates—their draymen, the coachman, the laborers, and artisans in their employ, and their family servants—must content themselves with but five to eight hours. On that average, then, our brain-workers have from one to two hours of sleep more than the muscle-workers. This is just as it should be.

Those who live by thought consume more tissue than those who live by muscular activity, and, in spite of all erroneous teachings, they find by experience that they must have a correspondingly greater amount of sleep.

Laborious workers need all the sleep that they can get, whether at night or in the daytime.—The night is the most appropriate season for sleep, and yet we should never hesitate to take a nap in the daytime whenever we find it necessary. Amid the cares and responsibilities of our modern civilization, there are unnumbered interruptions and contingencies that make it practically impossible for us to obtain our full amount of sleep in the hours that are usually devoted to that purpose.

To sleep is the one great hygienic commandment. It is the Alpha and the Omega, the beginning and the end, the first and last of the great laws of mental hygiene. He who understands and obeys this law really understands and obeys the whole hygienic decalogue, for no one can long sleep well who persistently disregards the other laws of health. Sleep is one of the best of our thermometers of health. By the quantity and quality of sleep that our patients can take we can best judge of their daily condition and of their progress toward recovery. We always feel assured that whatever improves the sleep of the exhausted invalid, to that degree helps him toward recovery, and that whatever disturbs this sleep, to that degree brings on relapse and disease. Prolonged sleeplessness is one of the earliest and most constant symptoms of insanity, of hypochondria, and of all the nameless forms of nervous disarrangement. Whenever, therefore, we find that we are not sleeping as well as we are wont; when our dreams are peculiarly dark, and ugly, and distressing, and leave unsightly scars in the memory; when we roll, and toss, and worry through the watches of the night, anxiously waiting for the day; when we awake long before our accustomed hour of rising, and find no pleasure in the morning nap, then may we suspect that our bark is nearing the quicksands and shallows, and then without delay should we examine our charts, revise our calculations, and according to our best judgment, return to the channel from which we have suffered ourselves to be driven.

Sleep of Plants.—A certain author thus compares the rest of plants to the sleep of the animal creation:—

“In many plants we even find something which may with great propriety be compared to the daily sleep of man. Their leaves every evening are contracted, or droop, their flowers shut themselves up, and their whole external appearance displays a state of rest and repose. Some have ascribed this to the coolness and

moisture of the evening ; but the same thing takes place also in the greenhouse. Others have considered it as a consequence of darkness ; but many shut themselves up in summer at six o'clock in the afternoon. Nay, the *Tragopogon luteum* shuts itself up so early as nine in the morning, and this plant therefore gives us reason to compare it to certain night birds and beasts of the animal world, which are active only during night, and sleep in the daytime.

“ Every hour of the day even has some plant which then shuts itself up, and on this is founded what is called a *plant-dial*.”

CLOTHING.

A necessary rule to be attended to, for preserving the body in a proper state of health, is to protect it from such effects as have a tendency to obstruct the perspiratory matter. In the sultry days of summer, every precaution should be taken that the body be not suddenly exposed to cold when overheated by exercise, by throwing off a portion of our clothing, as some persons are apt to do. Another rule to be attended to is to adapt our clothing to the climate, the different seasons of the year, and the period of life.

In warm climates, what is worn next to the skin should be made of cotton in preference to linen, which, when moistened with perspiration, is very apt to convey a sense of chilliness when the body becomes cool again. A proper attention ought to be paid, at the same time, to the situation of the person's residence ; to the frequency and violence of storms, and to the different periods of the day ; avoiding, if possible, an exposure to the moist and damp air of the nights ; but, where this is unavoidable, clothing the body accordingly.

Our summer clothes ought not to be worn too long, nor our winter ones put on too soon. In making the change, it will be best to do it *gradually*, which precaution is more particularly necessary for those who have passed the meridian of life.

Another material rule to be attended to, with respect to clothing, is to adapt it *not only to the seasons, but to the vicissitudes of the weather at different periods of the same day*. An attention to this point is particularly necessary where the weather is variable, and the transitions from heat to cold very sudden at different times of the same day.

In early life it is not so necessary to cover the body with a quantity of clothes, because the blood circulates with due energy, and the perspiration is free ; but in advanced life, when the circ-

lation is more languid and the skin more rigid, the clothing ought to be increased. A defect of due perspiration is probably the cause of many of the diseases to which the latter period of life is subject ; but this may, in some measure, be prevented by wearing, next to the body, those articles of clothing which are best calculated for promoting a due discharge from the skin by perspiration, such as those made of cotton, flannel, or fleecy hosiery.

The precise quantity of apparel which may be necessary for any person cannot be prescribed. It must be entirely a matter of experience, and every person is the best judge what quantity of clothes is necessary to keep him sufficiently warm and comfortable.

Every person should be careful that his linen is properly dried previous to its being put on. Many lives are annually sacrificed by persons putting on damp linen, as well as by sleeping in sheets not properly dried.

Due care should be taken to change the stockings, and other clothing, as speedily as possible after their becoming wet by an exposure to inclement weather. Many persons are so imprudent as to neglect this very necessary change, and to suffer their clothes, after such an exposure, to dry on them, assisted probably by going near a fire for some time ; but such a practice is always attended with risk, and not unfrequently gives rise either to rheumatism, fever, pleurisy, cough, consumption, or some other disease of a dangerous, or even fatal nature.

In warm climates, most persons are in the habit of changing their dress twice a day, particularly their body linen. Indeed, where such articles of dress are once soiled by copious perspiration their speedy renewal and change is not only necessary for the sake of comfort, but also for the preservation of health.

No part of our dress should occasion pressure. Cravats, stocks, necklaces, &c., should not be tight about the neck, as in this way they obstruct the blood in its course from the brain, and thereby give rise to headache, giddiness, fainting fits, or apoplexy. Neither should our garters be worn too tight, as they thereby not only prevent the free motion and use of the parts about which they are bound, but likewise obstruct their equal growth and nourishment, and give rise to varicose distention of the veins, aneurism of the crural artery, &c. But the most destructive way of applying tightness is that of squeezing the *stomach and bowels into as narrow a compass as possible, by the close lacing of stays, for the purpose of moulding the figure into what is called a fine shape.* Many women are sacrificed by this injurious practice. *Tight lacing* is attended with very injurious consequences, as the action of the

stomach and intestines, the motion of the heart and lungs, and all the vital functions are impeded; hence arise fainting fits, indigestion, costiveness, obstructed menstruation, coughs, consumptions, and many other complaints.

Attention should be given to the different materials from which our clothes are made.

Wool is an excellent material for clothing. Clothing keeps us warm, by *retaining* the heat that is in the body. They impart no heat. Clothing, in order to be warm, should be a *bad conductor* of heat. Wool is such a bad conductor. It is therefore very warm. Flannel is the best substance to be worn next to the body.

Linen is a *good* conductor of heat. It is therefore not warm, but is adapted for hot weather.

Cotton is not so good a conductor of heat as linen, and is therefore warmer.

Clothing should be more or less *porous*, so that the perspiration may have free passage.

The *color* of the clothing is a matter of importance.

White clothing does not absorb the rays of light well, and is therefore cool. *Dark* clothing absorbs the rays, and is therefore warm.

These facts have been established by direct experiment.

BATHING.

Personal cleanliness is chiefly effected by a frequent change of dress, but is much increased by ablutions of different parts of the body daily with water. The teeth ought to be cleansed after every meal, as the refuse of the food settles about them, rapidly becomes putrid, and proves injurious to them, as well as to the gums. Every morning the tongue should be cleansed, and the throat be well gargled and washed out with water.

The teeth are apt to become incrustated with tartar, which in time very much injures the enamel with which they are coated externally; it should not, therefore, be suffered to collect, but be removed from time to time. They should be washed every morning with a small piece of sponge, or very soft brush, dipped in cold water, joining occasionally the powder of charcoal. If any of the teeth have a tendency to caries or rottenness, or the gums are spongy and bleed, the mouth may be washed with equal parts of the tincture of myrrh and bark, somewhat diluted with water.

Plate 4.



FIG. A. Method of producing Hot Air for the Turkish Bath.



FIG. B. Method of producing Steam or Vapor for the Russian Bath.



FIG. D. View of the Bather with apparatus in position.



FIG. C. Arrangement for producing Steam for local applications and use in the sick room.

TURKISH, RUSSIAN AND OTHER BATHS AT HOME.

Attention to the feet is also very necessary, particularly in warm weather, and with those who, from a peculiarity of constitution, have them very moist. The perspiration proceeding from them in hot weather, and after much walking, emits a very disagreeable smell. They ought, therefore, to be frequently washed; but no means for stopping the discharge should be resorted to, as serious diseases might thus be induced. Great cleanliness, by daily ablutions of the feet and a change of stockings, are not only the most convenient, but the most salutary means of preventing all discomforts.

Ablutions with water should also be extended to other parts of the body. When a habit of cleanliness is once established, no rules will be requisite, as the feelings of the individual will sufficiently indicate what is proper in this respect.

Frequent ablutions or immersions in water are very beneficial, and are the most effectual preventives of many distressing maladies. Cleansing the skin by rubbing, washing, and bathing is a very salutary operation. Indeed, it is nearly impossible for any person to be perfectly healthy who lives in the constant and habitual neglect of these means.

Where the person labors under no disease which is contradictory to the employment of a cold bath, this may be substituted in the summer and autumnal periods of the year for minor ablutions of the body; and bathing in the sea is entitled to a preference among the young and middle-aged. Cold bathing does not, however, produce any considerable tonic effect upon old persons; and besides, any sudden chilling of the skin repels the circulation from the surface of the body, and determines the blood upon the inward parts, which is always attended with some risk to persons advanced in life.

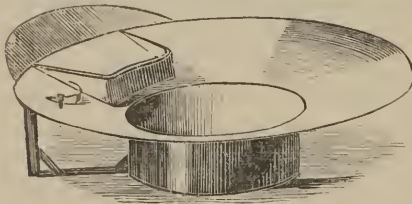
To ascertain whether or not cold bathing is likely to be serviceable to the person who employs it, he has only to attend to the following circumstance. If, after bathing, he feels a genial glow of warmth pervade the body, with an increased degree of vigor, he may be assured that it is likely to prove beneficial; but, on the contrary, if he feels a cold or chilly sensation remaining some time after, it should not be persisted in.

The best time of the day for cold bathing is before breakfast, but it may be used at any period of the forenoon, taking due care not to resort to it when the body is heated by exercise, nor immediately after a meal on a full stomach.

Inuring children to cold bathing is generally productive of much advantage to them, particularly those who are perceived to be of a

weak constitution, provided they labor under no organic disease. In conjunction with proper exercise, it is of all means the best calculated to make them strong and healthy, and may be considered as a powerful antidote against rickets, scrofula, and other disorders.

For elderly people, tepid bathing will be more appropriate, and will be found no less salutary than pleasant. A warm bath is a remedy of high utility where any shock has been suddenly given to the perspiration by an exposure to cold or wet, and it proves very serviceable in many disorders, such as inflammatory affections of the stomach and bowels, rheumatism, and various other diseases.



PAN FOR SPONGE OR HAND-BATH.

The *general* use of hot water in the form of vapor is a remedy of great utility in various complaints. Whenever the joints become rigid, and the pain upon motion exquisitely severe, or where the muscles are contracted (and, indeed, in all protracted cases of any disease of the hip-joint, lumbago, or sciatica), the vapor of hot water, properly applied, will seldom fail, in conjunction with other suitable applications, to prove a safe and successful remedy. The mode of applying it *topically* must be regulated according to circumstances. A boiler, with a long pipe or tube affixed to it, forms a simple apparatus, Fig. C. By means of this the parts affected may be steamed for about half an hour at a time, repeating the process twice or thrice a day.

We give in brief a Definition of the various kinds of baths :

The Turkish Bath is produced by hot, dry air.

The Russian Bath, by hot steam, or vapor.

The Sulphur-Vapor Bath, by hot steam combined with the fumes of sulphur (this is given with the head of the patient protected from the fumes).

The Electro-Vapor Bath, by hot steam with Electricity.

The Electro-Thermal Electric Bath, by electricity administered in warm water.

Electric baths are given in various ways. The general principle is a bathing tub of some kind, the ends or sides of which are connected with one pole of the battery, while the other pole is connected with an electrode in the hands of the patient in the bath, or to some electrode of large surface in the water, or at the other end of the tub.

The *galvanic* current of electricity is generally used for electric baths. It is not proved that electric baths have any advantage over other methods of using electricity in medicine. (*See Electro-Therapeutics.*)

The *Bran Bath*, by suspending in warm water, the fine particles of wheat bran in a bag, in a common bathing tub.

The *Mercurial-Vapor Bath*, by placing thirty grains of calomel in a saucer, surrounded by a little water, which will evaporate in about twenty minutes. This is of great value in syphilitic cases.

The Turkish, Russian, Sulphur, and other baths, may be taken in our homes, when one is at a distance from, or is too feeble to reach the specially-fitted bathing establishments of our cities. See Plate 4. Fig. A illustrates Hot Air; Fig. B, the Vapor Baths.

This is done by a spirit (alcohol) lamp (large wick), placed under a cane-seat chair covered by one or two thicknesses of towel-ing. The patient is then enveloped in a water-proof cloak, of cloth, rubber, or asbestos cloth, or in the absence of these, heavy blankets, and remains from thirty to forty-five minutes, according to the condition of the case.

Then sponge the body with tepid or cold water; after this, rub till quite dry, and in a glow of heat. The perspiration is facilitated by placing the feet in a warm bath, Fig. D, and drinking hot tea or lemonade.

The common impression that it is injurious to take a shower-bath of cold water after a hot-air or vapor bath, is erroneous, *provided we are not exhausted*. Those who bathe in a cold stream, after they are wearied by severe labor or a long walk, are very apt to injure themselves.

In the large Turkish and Russian bathing establishments, the bather reclines for some little time, until, by the influence of the hot air or vapor, he is thrown into a profuse perspiration. He is then rubbed by an attendant, and afterward receives a shower or douche of cold water.

The duration of the bath is from *ten* minutes to one hour, or more, according to the constitution and habits of the bather. A very frequent mistake is to prolong the stay in the hot room. For the feeble and nervous, and for all who are not accustomed to the Turkish or Russian bath, a too long stay in the hot room is liable to cause debility and chilliness; in this way many get a prejudice against all baths of this kind, simply because they have not used them wisely.

Besides their general cleansing and invigorating effects, these

baths are oftentimes of decided service in rheumatism, neuralgia, and various nervous conditions.

They ought always to be in the hands of careful, and skilful, and honorable men. In every bath-room there should be a superintendent, to take especial charge of all invalids and newcomers. For want of this guidance and direction, the weak oftentimes have the same treatment as the strong, and are thereby injured. Every establishment should have two or three rooms, with the temperature graduated to the strength of the bathers.

REGULATION OF BOWELS.

Too great a looseness of the bowels or habitual diarrhœa, is productive of as much danger and inconvenience, as considerable constipation. The occasional occurrence of a moderate looseness is frequently only an effort of nature to expel and carry off something morbid from the intestines, and therefore not to be considered in the light of a disease; still, when it occurs too frequently, or too copiously, and is long continued, some obscure disorder in the bowels, or some material defect, may be suspected. Under circumstances of this nature, the looseness must be stopped, or rather mitigated by the assistance of medicine; otherwise the body will be deprived of its due nourishment, the strength and spirits be exhausted, and ultimately it will destroy life.

One *copious* stool a day is sufficient for an adult in health. More or less may be injurious in a general way. To obtain this regular action of the bowels, the best plan is to rise betimes in the morning, take gentle exercise in the open air, then breakfast, and very soon afterwards visit the privy, whether the person has an inclination or not, *soliciting* nature patiently and perseveringly and by proper efforts. Habits of this kind may be acquired, which will in time become perfectly natural. In this way many cases of habitual costiveness have been completely subdued, and perfect regularity in the action of the bowels established.

A serious evil attendant on frequent recourse to medicines for the purpose of removing costiveness is, that after a time, the bowels will not act without them, from a want of the accustomed stimulus. Those who are subject to habitual constipation, had better attempt to remove it by diet and exercise, than by drugs, carefully avoiding, at the same time, all articles of aliment which are of an astringent nature.

Persons troubled with habitual looseness, should make use of food that is likely to brace and strengthen the bowels, and which

is rather of an astringent quality, such as rice boiled, milk, eggs, cheese, sago, arrow-root powder, and wheaten bread made of the finest flour. Red Port wine, brandy sufficiently diluted, and toast and water, will be the most appropriate liquors to drink.

As obstructed perspiration is not unfrequently a cause of looseness in the bowels; persons who are affected with it, should wear flannel next to the body, and carefully avoid all exposures to cold.—(See *Constipation*.)

THE URINE.

When it is too copiously discharged, it gives rise to thirst, emaciation of the flesh, prostration of strength, depression of spirits, &c., and constitutes that species of disease called diabtes. On the contrary, when the urine is too long retained, it is not only re-absorbed or taken up again into the mass of fluids, but by stagnating in the bladder, it becomes thicker, and the formation of gravel and stone is promoted. Hence it happens, that indolent and sedentary persons are much more liable to these diseases than those who lead an active life.

It has been supposed that the quantity of urine secreted, and voided in the course of the twenty-four hours by a person in health, is generally about a third part of the fluids that are taken. This being habitually exceeded is presumptive proof of debility, with too great a laxity of the urinary organs and passages, the effect of which is to expose the person to a general waste of the flesh and strength. The urine being smaller in quantity than what has been stated as the general average, unless proceeding from a deprivation of liquids, denotes an extraordinary degree of heat in the system, or it may arise from a dropsical tendency, or from some obstruction in the urinary passages.

By retaining the urine too long, many persons have greatly endangered their lives. The calls of nature in this way, ought, therefore, never to be postponed; for if the bladder is over-distended, it is very apt to lose its power of action altogether, and to become unable to expel the urine properly, and this over-distension destroys the powers of the organ.

A retention or suppression of urine, under all circumstances, and in all situations, may be considered as an alarming and dangerous disease, which demands the most prompt and speedy means of relief that can be afforded. In pregnant women, in or about the time of labor, the urine being retained or suppressed, calls for prompt assistance, otherwise they will be exposed to the risk of a ruptured bladder, or a retroversion of the womb.

PERSPIRATION.

Perspiration is the fluid that is secreted by the extremities of the cutaneous arteries from the external surface of the body. It is usually distinguished into *sensible* and *insensible*. The last is separated in the form of an invisible vapor; the first is visible in the form of very little drops adhering to the skin.

The insensible perspiration is supposed to exceed any of the other discharges from the human body, and is of the utmost importance to health; for when it is obstructed, the whole frame soon becomes disordered. It varies in quantity according to the temperature of the atmosphere, the season of the year, climate, age, sex, and general mode of living. Thus men have a more copious, viscid, and higher colored sweat, on summer days, and in warm countries, than in colder regions. The sweat of a man usually exceeds that of a woman, and is also supposed to be of a more acrid smell. The young are more subject to sweat than the aged, who, during the excessive heat of summer, perspire very little. A long abstinence from drink causes a more acrid and colored sweat; and the drinking a great quantity of cold fluids in warm weather, a limpid and thin perspiration.

The uses of the insensible perspiration are, to liberate the blood from superfluous animal gas, azote, and water; to discharge the noxious and heterogenous excrements; hence the acid, rancid, or putrid perspiration of some men.

The use of what is termed the sensible perspiration, or sweat, in a healthy man, is scarcely observable, unless from an error of the six non-naturals, which comprehend air, meat and drink, sleep and watching, motion and rest, retention and excretion, and the affections of the mind. The first effect of the sensible perspiration on the body, is somewhat prejudicial, by its exhausting and drying it, although it is sometimes of advantage by supplying a watery excretion; (for when the urine is deficient in quantity, the sweat is frequently more abundant;) and also by discharging at the same time, any morbid matter; thus various subtile particles are critically expelled from the human body, in acute and chronic diseases, with the sweat.

Whatever gives a sudden check to perspiration may be productive of very injurious consequences, and these should be carefully guarded against, as many persons annually die by not paying proper attention to the various causes from which perspiration may become obstructed; one of the most common of which is, taking cold.

By sudden transitions from heat to cold, either from changea-

bleness of the weather, the state of the atmosphere, going immediately from a hot room into the cold air, or throwing off some part of the clothing when heated by exercise, the perspiration is very apt to be obstructed, and colds, coughs, and inflammation of the lungs are the usual effects of such conduct. Drinking freely of cold water, or any other small liquor, *when the body is heated*, is not only injudicious, but fraught with many ill consequences. Damp houses, and damp beds, or linen; exposure to night air, especially in hot countries; not changing clothes quickly after their getting wet; and continuing to wear stockings, shoes, or boots which are saturated with water, exposing the feet thereby to cold, are all likely to be attended with injurious consequences, by occasioning obstructed perspiration. The same will happen by throwing open a window, when the room is hot, and sitting in or near it, so as to be exposed to a current of air. In the hot season of the year, some persons sleep with a window open. Whenever this practice is adopted, great care should be taken that the window is at a considerable distance from the bed, and that the air admitted into the chamber does not come in a current upon the person. *Some, however, can sleep in a current of air without injury. When the windows are open there should be plenty of clothes on the bed.* It is always injurious to sleep cold.

Some are so imprudent or foolhardy as to bathe themselves in cold water when considerably heated by exercise, and by such conduct have been soon attacked with severe disease. In some instances death has been the consequence.

Some persons, when they happen to get wet feet, wash them with some kind of ardent spirit. This is always attended with very great danger; for instead of promoting and keeping up the due circulation in the feet, it will greatly increase the check which has been given to it by the exposure to wet. The speedy evaporation of the spirit produces a considerable degree of coldness. The better and safer way is, to well dry the feet, then to rub them for some time with flannels made warm by the fire, covering them afterward with woollen stockings; and lastly, for the person to take a little warm drink, keeping for some time in motion.

On all occasions, carefully avoid sudden transitions from heat to cold, keep the body in as uniform a temperature as possible, and when it is overheated let it cool gradually.

INFLUENCE OF THE WEATHER ON THE CHARACTER.

The three great influences that determine the character of individuals and nations are *race, climate, and diet*.

To a certain extent, individuals as well as communities are elevated or depressed by the government under which they live, by their religious belief, by their education, and by their material and social surroundings; but, then, all these ultimately depend on the character that has been inherited from generation to generation, and that has been developed and modified by climate and diet. Comparing the influence of hereditary descent and climate, we know by the testimony of history that the first has always been dominant. The Indo-European race, for example, has always triumphed wherever it has extended. It has embraced a large number of widely-diverging nationalities under opposite phases of climate, but it has always conquered. The Indo-Europeans of warm climates have not been equal to those of temperate or colder regions, but they have shown *relative* superiority as compared with the nations about them who were subject to the same climatic conditions.

The same general facts have been observed in the history of races everywhere. All people can, in a measure, rise superior to the depressing influences of excessive heat; but all, whatever may be their descent, however great their native energy and ability, are inferior to the same people in the temperate zones.

It has been the custom to speak of the religious belief, the form of government, the system of education, as the great causes of the differences in nations. As I have said, these influences have, undoubtedly, a share in the work of moulding humanity; but inasmuch as they are themselves determined very largely by hereditary descent and by climate, they cannot be regarded as final causes.

The effect of climate is seen in the history of the Jews more markedly, perhaps, than in that of any other people. The Jews, in all parts of the world, are descended from a common stock. Almost invariably they intermarry, and in every way strive to maintain and perpetuate themselves as a distinct and peculiar people. Their success has been almost complete. Their blood has but rarely mingled with that of any of the races with which they have associated. Therefore, whatever differences are seen in Jews in the various parts of the world may fairly be attributed to climate. In Palestine—their native country—they are of a tawny color; further east they are of a darker hue, in proportion as we ap-

proach the regions of torrid heat. In Europe and in North America their color is comparatively fair, and not unfrequently is as white as that of the Anglo-Saxon. They retain, however, wherever they have penetrated, or under whatever systems they have lived or suffered, the leading distinctive characteristics of their race. The shape of the nose, the color and expression of the eye, and the general physiognomy of the Jew, are as unmistakably diagnostic in Malabar as in Europe, in all the extremes of climate as in their own native Judæa.

The effect is also seen in the branch to which we belong. Concerning this important subject of races, there is much that is conjectural and misunderstood, but certain facts have been gleaned from the experience and research of the world that seem to be pretty well established. It is quite clear that Indo-Europeans—including the inhabitants of Europe easterly to Hindostan—are descended, in the main, from a common stock. But how very positive are the differences of color and appearance between the inhabitants of India and Central or Northern Europe! So far back as history sheds light on this subject, we find that the Gauls and the Britons were described as blue-eyed and of fair complexion. The color of the Hindoos is brown, and so far as is known or can be ascertained, has always been so.

All denizens of high latitudes are essentially inferior in intellectual as much as in physical stature. Their temperaments are not only coarse, but are exceedingly inactive, for their climate does not seem to allow them to exercise and develop what little of character may inhere in their race. Their nervous fluid seems to be literally congealed, and they evince less force of will, less character, less activity than the dweller by the Amazon, or even the negroes on the Congo.

It is very pertinent to inquire whether climate may not modify the quality and the quantity of the cranial contents. The question is, however, so deeply complicated by the differences, varieties, and intermixtures of races, that it is not entirely easy to answer. Reasoning from analogy, it seems very clear that when the brain is not used it must become more or less modified in form and structure, and undergo degeneration both of quality and quantity. We know that the muscles increase in size and hardness by exercise, and become flabby and small by long disuse, and it would seem that the brain and nervous system must follow the same law. Accordingly we find that the skull, which always adapts itself to its contents, slowly changes in form under long-continued and unfavorable conditions. Even in civilized lands we can trace a difference in the

form of the skull of the higher and the degraded classes. Thickness of the lip, widely opened mouth, large and projecting jaws, low and especially retreating foreheads—these are the symptoms of ignorance, hard poverty and low life, just as the opposite appearances—thin, delicately chiselled lips, firmly closed, narrow gums, and broad, expansive brows—are the marks of intellectuality, character, and social position. Dr. Prichard calls attention to the fact that the Turks of Europe have lost the pyramidal shape of cranium that characterized their ancestors in Asia, and have gradually taken on the elliptical form. This change is the result of change in climate and mode of life.

Dr. Draper presents the following suggestive theory concerning the effect of climate on color :

“Now there is no organ which is more quickly disturbed in its duty by a high temperature than the liver. Whether such a high temperature produces its effect through a disturbance of the action of the lungs, or through an impression on the skin, is quite immaterial. If the organ be in any manner enfeebled in its duty, and no other avenue is open through which the degenerating hæmatin may escape, it must accumulate in the circulation, and be deposited here and there in suitable places. Under such circumstances, there arises a tendency for its accumulation in a temporary manner in the lower and more spherical cells of the cuticle, from which it is removed by their gradual exuviation and destruction as they become superficial. The temporary deposit of the coloring matter in this situation imparts to the skin a shade more or less deep. It may amount to a perfect blackness ; for the origin of the black pigment of the negro is the same as that of the black pigment of the eye in all races, and the predominating percentage of iron it presents plainly betrays that it arises from a degenerating hæmatin, in which the same metal abounds.”

“I believe, therefore, that the coloration of the skin, whatever the particular tint may be, tawny, yellow, olive red, or black, is connected with the manner in which the liver is discharging its function. That deposits of black pigment can normally arise in the way of a true secretion by cell action is satisfactorily proved by their occurrence in angular and ramified patches in the skin of such animals as the frog ; and that hæmatin, in its degeneration, may give rise to many different tints, is substantiated by the colors exhibited by ecchymoses.” The great difficulty in our study of the effect of climate consists in our want of positive and reliable knowledge of the early history of mankind. If we could trace the history even of any one race or tribe for a sufficiently long period, the question might be settled.

CHANGE OF RESIDENCE.

RULES FOR PERSONS WHO GO FROM A COLD TO A TROPICAL CLIMATE.

Avoid arriving in a tropical climate during what is termed the rainy season of the year; this, with some little variation, according to the place of destination, commences in August, and terminates at the end of October, or beginning of November.

Your place of abode should be somewhat elevated, dry, open to the air and sun. Marshy grounds, and stagnant waters, when acted upon by a powerful sun, always send forth noxious exhalations and vapors, which give rise to intermittent and remittent fevers, fluxes, &c. When obliged to inhabit a house which is situated low, it will be prudent to occupy one of its highest apartments.

Expose yourself at first, as little as possible, to the intense heat of the sun at mid-day, and cautiously avoid the dews and damp air of the night.

Wear cotton* next to the skin, not linen. Go early to bed, rise betimes, making use very soon afterward of a cold bath, one of the best means of counteracting the injurious influence of a warm climate, and affording the most grateful sensations.

After cold bathing, take gentle exercise, the morning being preferable for this to any other part of the day. Avoid any exposure of the body afterward to a current of air, and the drinking any cold liquor when you are much heated. If at any time overtaken by rain, so as to have your clothes wetted, change them as quickly as possible. Pay strict attention to cleanliness, not only by changing the linen once or twice every day, but also by minor ablutions of different parts of the body with cold water.

Persons just arrived in a tropical climate should partake only moderately of the delicacies of the table, and make a very temperate use of vinous or spirituous liquors. Before dinner, a solution of preserved tamarinds in water, simple lemonade, or the liquor known by the name of imperial, are appropriate drinks.

Such persons should also refrain from all amusement and exercises of a heating nature. They should moderate all sensual gratifications, and cautiously guard against a costive state of the bowels, by regularly repairing to the privy once or twice a day at a stated hour, and then *soliciting* natural evacuations. If at any time these efforts should not be attended with due effect, one or two motions ought to be procured by the aid of an injection, or some cooling laxative.

* Flannel is, on some accounts, preferable to cotton.

Soldiers and sailors are very apt to suffer, in a tropical climate, from the effects of intemperance, conjoined with an exposure to intense heat during the day, and moist air at night; and it therefore greatly behooves those who are placed in command over them, to be as attentive as possible in preventing such occurrences. The health of seamen, in particular, will much depend upon their avoiding undue exposure to the sun, rain, night air, intemperance, unwholesome duties on shore, and, in fine, to all such occupations as subject them to excessive heat or noxious exhalations, as these never fail to be highly dangerous to those not assimilated to the climate.

When pitching tents for soldiers or sailors on shore duties, the driest and highest spots should be chosen, and under cover of these, hammocks should be suspended. The men ought not to be suffered to sleep on the ground.

Persons who come from a cold to a warm country are more liable to many diseases, and particularly to fever, than the natives, and those who have been acclimated by time. The same exposure will produce fever, or other disease, in a stranger, while the native and old inhabitant will not be at all affected by it; or even supposing that both are attacked, the symptoms will be tenfold more urgent and severe in the former than in the latter.

Observe a strict temperance in diet, living chiefly on vegetables and ripe fruits for the first two or three months, partaking very moderately of pure wine, and avoiding, as much as possible, any exposure to the intense rays of the sun during the day, and the cool or damp air of the night, until the constitution has become assimilated to the climate. In closing this article we give a word for those who come from a warm climate.

The principal precaution to be observed by those who leave a warm climate, and either visit or become settled inhabitants of a cold one, is to arrive in the latter before the approach of winter, and to make such a suitable change in every part of their dress as shall effectually guard their bodies against the difference and vicissitudes of the atmosphere which they must encounter. On this account waistcoats and drawers of flannel should be worn by persons of both sexes next to the body on the approach of cold weather, and the *outer* garments should consist of articles of a close and warm texture.

ATMOSPHERIC ELECTRICITY.

Electricity is usually present in the atmosphere. The amount varies with different seasons of the year and different hours of the day. Atmospheric electricity has a positive effect on the health, for good or evil. When the electricity is low—that is, when the amount of positive electricity in the air is small, as in the *middle of the afternoon, or twenty-four hours before one of our north-east storms*—then we are apt to feel stupid, sleepy, and depressed; then our corns, bunions, and sores begin to ache, then neuralgia and rheumatism and headache come on. *These are not matters of imagination; they are realities.*

The following table and remarks I quote from the report of Dr. Wislizenius, of St. Louis:

“Yearly Mean of Positive Electricity, of Temperature, and of Relative Humidity of the Atmosphere at the hours of 6, 9, 12, 3, 6, and 9, from morning till night, based upon daily observation at those hours in 1861, 1862, 1863, 1864, and 1865, at St. Louis, Mo.

ELECTRICITY.

YEAR.	6 A.M.	9 A.M.	12 M.	3 P.M.	6 P.M.	9 P.M.
1861.....	8.5	9.9	9.0	7.7	8.5	6.8
1862.....	8.9	10.0	9.1	7.3	8.1	6.8
1863.....	10.5	10.6	10.0	7.5	9.1	7.4
1864.....	7.9	8.8	7.4	5.4	5.9	5.5
1865.....	6.4	7.1	6.0	5.3	5.4	3.8
Mean.....	8.4	9.3	8.3	6.6	7.4	6.1

REMARKS.

“The above table contains a summary of my observations of atmospheric electricity, for five years. They are based upon five daily observations, made with *Dellman's* instruments. As a result of these researches, I have found the following laws:

“1. The positive electricity, floating generally in our atmosphere, exhibits a daily periodicity, by two maxima and two minima in twenty-four hours, a first maximum appearing about 9 A.M., a second about 6 P.M.; and a first minimum about 3 P.M., and a second about 9 P.M., which is continued till after midnight.

“2. Besides this daily periodicity, there exists a monthly one.

The far greater quantity of positive electricity appears in the colder half of the year, and the lesser in the warmer half.

“3. There is possibly also a yearly periodicity of eleven years, following the same periodicity that exists between terrestrial and solar magnetism—between the declination of the magnetic needle and the solar spots. The present period extends from 1859 to 1870, with maxima at these two end points, and with a minimum in the middle, in 1865. The uncommonly low mean of electricity in 1865, which cannot be accounted for by other meteorological phenomena, seems to favor this supposition ; but observations must be continued for many more years to decide that point.”

This subject of the dependence of mental states on atmospheric electricity is one of exceeding interest. It is only recently that we have had observations concerning atmospheric electricity sufficiently detailed and reliable to be of service in studying this dependence of the character on the electrical state of the atmosphere. The writings of Dr. Wislizenius, above quoted, are of special value, because he is one of the very few who have given this subject attention.

In the morning, between 9 and 12 o'clock, we can usually work better than at any other portion of the day. This is the time of the day when there is the greatest amount of positive electricity in the air.

Between midnight and sunrise there is less positive electricity in the atmosphere than at any other time of the day. This is the time when, as we are told, more people die than at any other period of the twenty-four hours.

In the winter—in December and January especially—there is more positive electricity in the air than at any other season of the year. These are the months when we feel most like work. These are the months that students love.

In the summer, in July and August especially, there is less positive electricity in the air than at any other season of the year. These are the months when we feel least like work.

Some attention has been given to the relation between atmospheric electricity and disease. The subject is yet in an unsettled condition, but some of the theories that have been advanced are at least suggestive. It is believed by some that our epidemics are caused by electrical changes, and by excess or deficiency of ozone. I refer inquirers to my paper in *Popular Science Monthly*, February, 1874.

MANAGEMENT OF SICK ROOMS.

FURNITURE.

This should always be both selected and arranged so that every article whenever wanted, and however suddenly, may be instantly found, and without needless disturbance of the patient in any way. In cases of severe sickness (to which alone we here refer) the sick room should be disencumbered of all needless furniture; and all which can avail to the comfort and convenience of the invalid, should, if possible, be procured.

One small table should stand near the bed for all articles wanted for *frequent* use, such as glasses, cups, spoons, drinks, medicines for the day, &c.

A larger table placed more remotely from the bed, should also be provided for medicines and utensils *occasionally* used, and for an extra supply of pure water. This should be furnished, and from time to time replenished, and amply, with articles necessary to the various ministrations of the sick room, that the patient may not be disturbed by the opening and closing of the door whenever any such article may be suddenly needed.

There should always be in the room a convenient place of deposit for broad and narrow tape; old, clean linen; sponges; lint; rolls of muslin; linen and flannel bandages about two inches wide; pins, needles, thread, scissors, plasters, &c., that they may always be at hand upon any possible emergency.

Drawers should be furnished for a plentiful supply of clean, well-aired linen. Soiled linen should never be allowed to remain in the room a moment.

Again—provide a distinct place of deposit for an abundance of towels.

Let the wash-stand be constantly provided with additional vessels, and with an abundance of water.

A sofa, easily moveable, or something which will answer the same purpose, is very desirable—sometimes essential—for the comfort of the patient when the bed-linen needs to be changed.

The *entire* room should be carpeted for the sake of stillness, cleanliness and dryness. If but a part of the room can be thus covered, let the remainder never be washed, but swept, and (to avoid annoying the patient) with a brush, rather than with a broom.

A mattress, a bed-pan, a pillow stuffed with curled horse-hair, or one made of India-rubber, to be filled with air, a thermometer, a pair of apothecaries' scales, a basin—when it can be procured—graduated to ascertain the quantity of blood taken by bleeding, a

minimum measure, to measure precisely the quantity of fluid medicine to be given at a dose, a syringe for the bowels, and a common *nurse lamp*, should always be at hand. With these articles every family should at all times be provided. Most of them can be obtained at small expense.

No kettle or any implement of cooking should be allowed in the room. The nurse lamp will answer for heating fluids.

BEDS AND BEDDING.

Beds without curtains are always preferable. In cases of fever especially, the mattress should be placed uppermost. The bed-clothing should not be burdensome, and should be immediately removed and well aired, when the patient is transferred from the bed. The sheets used at night should be exchanged for others in the morning, and again used, if not soiled, at night. If this latter cannot be done, the sheets should be changed once in twenty-four hours, especially when the fever is infectious. This will essentially prevent its communication to the blankets or to the furniture of the room.

NOISE.

Even the slightest is excessively irritating and therefore injurious to the sick. To prevent it—open and shut the doors with the utmost gentleness, list them and oil their hinges—check the whistling of the wind through doors, windows, and key-holes—move all articles in the room with care—let every person in the room be shod with slippers or with something equivalent—forbid all needless conversation even in whispers, for *concealed* conversation will very probably excite the jealousy and fears of the patient—and *let no neighbors enter the room merely to gratify curiosity, to express sympathy or to give advice*. If their services are needed, employ them and thank them; otherwise exclude them. Medicines and medical skill have often been baffled, and the lives of the sick sacrificed by the intrusion, always agitating, of friends whose assistance is not needed.

VENTILATION.

Ventilation is always of primary importance, particularly in those fevers in which miliary eruptions display themselves; under no circumstances is it so essential as in febrile diseases of an *infectious* kind. Infection, however, rarely extends above a few feet from the body of the patient; and, even in the most malignant diseases, with the exception of confluent small-pox and malignant scarlet-fever of the worst kind, its influence does not exceed a few

yards if the room be well ventilated. On the contrary, if ventilation be neglected, the power of infection becomes greatly augmented, it even settles upon the clothes of the attendants and on the furniture of the room; and these imbibe it most readily when their texture is wool, fur or cotton, or any loose or downy substance capable of receiving and readily retaining the air. Smooth and polished surfaces do not easily receive or retain infectious matter; consequently the nurses and attendants, in cases of infectious diseases, should have glazed gowns, and aprons of oiled silk.

In no infectious diseases are these rules more essentially necessary than in small-pox and scarlet-fever. It is well known that if the bed-clothes of a patient laboring under either scarlet-fever or small-pox be closely folded up, they will retain the infectious matter, and communicate the disease at a great distance of time; but the influence of free ventilation is so great, that medical practitioners who are attending small-pox patients, and who go from them into the open air, do not spread the disease. Indeed all infection is weakened by dilution with air. The danger of infection is augmented, if, along with bad ventilation, the atmosphere of the room be moist from any cause.

Infectious matter, even of the most virulent description, is not poisonous to every one within its influence. A predisposition of the body to receive the infection must exist before it can be communicated: a condition which is augmented by fatigue and watching, defective nourishment, mental depression, or anything which can lower the vital powers. The necessity, therefore, of maintaining these powers by attention to rest, a sufficient quantity of good and generous diet, and cheerfulness of mind, need not be insisted upon.

In every case of infectious disease, the attendants, even in the best ventilated rooms, should stand on the windward, or on that side of the sick-bed from which the current of air comes; as by neglect of this rule, and by standing in the current which has passed over the patient, the infectious exhalations are blown upon them in a direct stream from the body of the patient. The attendants should never lean over the sick, nor should they receive their breath. The health also of the nurses should always be supported by a nutritious and generous diet.

The term infection, in its most extensive signification, implies some deleterious matter, originating from any source and transmitted through the air, which is capable of causing diseases in the human body. When this matter is emanated from the diseased bodies of men, the term is frequently regarded as synonymous with *contagion*; but, in strictness of language, the latter refers only to the

communication of disease by *contact*. To prevent the communication of disease by infection, not only is it necessary to dilute the atmosphere of the room with pure air, but also to destroy the virulence of the infecting matter by chemical agents or fumigations. (See *Disinfectants*.) But no such agent is equivalent to cleanliness, frequent changes of the sheets and linen of the patient, and free ventilation, for checking the propagation of infection.

TEMPERATURE.

Next to ventilation, nothing is of more importance than the regulation of the *temperature* of the sick-room, avoiding both extremes of elevation or of depression; but much depends on the nature of the disease.

The best general temperature of a sick-room is 60° (Fahr.), or that of summer in this climate; and it is preferable to regulate this rather by the thermometer than by the sensations of the patient or the attendants. Under some circumstances, however, the feelings of the patient, and his susceptibility of impressions upon the skin, should not be overlooked. Thus, if the temperature be a little above that of summer, and the patient, nevertheless, feel chilly, it should be raised five or six degrees. This chilliness is very apt to be felt in a dyspeptic state of the habit, and more especially when it is accompanied with hypochondriasis. It differs from that more severe but transient coldness which accompanies intermittent fevers and some other periodical affections; and it requires only an elevated temperature of the air for its removal, whilst the cold stage of intermittent diseases is best relieved by the warm bath, either general or local.

So important is the regulation of temperature, especially in fevers, that it often does more good than any other remedial measure. I have seen patients laboring under high delirium, in a close, ill ventilated room, become rapidly quite collected by merely lowering the heat of the apartment twelve or fifteen degrees. On the contrary, even a moderate depression of the usual temperature of the sick-room, in pulmonary diseases, will excite coughing and augment the severity of all the symptoms.

In regulating both the admission of air into the apartments, and temperature of the bed-rooms of the sick, in particular of those susceptible of pulmonary diseases, much caution is requisite not to over-heat, nor to keep too dry, the air of the room.

CLEANLINESS.

Although cleanliness in the sick-room is essential, yet it may be carried so far as to become an annoyance to the invalid, and consequently to prove injurious. It is not requisite to sweep the room daily, nor to dust and to arrange the furniture every morning, provided order be preserved in the room, and nothing but what is immediately necessary for the comfort and the convenience of the invalid be permitted to remain in it. It is truly distressing to observe the confusion which prevails in some sick-rooms: everything being out of place, and to be searched for when it is wanted.

The period chosen for cleaning and arranging the sick room should be the morning; as, after a night's rest, the patient is more able to bear the little noise and bustle which it always more or less occasions. The carpet should be sprinkled with moist tea-leaves and lightly swept; and, during this operation, the curtains of the bed, if there be any, should be drawn.

It is scarcely requisite to insist on the necessity of the utmost attention to the cleanliness of everything in the sick room. The moment after any vessel or implement is used by the invalid, it should be removed from the apartment, and returned as soon as it is cleaned. Nothing in the form of a slop-basin or a slop-pail is admissible: they only administer to the laziness of nurses.

The necessity of cleanliness in the vessels used for the food of invalids is strikingly illustrated in the bad effects arising from the neglect of it when an infant is brought up by hand. In such a case, if either the feeding-bottle or the boat which is employed be not instantly cleansed after the meal has been given, the small portion of the pap or food which remains in the vessel becomes sour, and taints the whole of the fresh food mixed with it, causing colic and convulsions in the infant. The same risk of injury occurs in the sick-room, if the vessels used for administering food to the invalid be not instantly and well cleansed, after every time they are used.

It is too customary, also, to use one glass or cup for administering medicines, and to leave it unrinsed from time to time—a custom which may prove as deleterious as a defect of cleanliness of vessels employed for food. Some medicines, when they are exposed to the air, rapidly undergo changes which alter their properties; and this alteration having been undergone by the small portion which is always left in the glass or cup, communicates the disposition to be decomposed to that which may be next poured into the cup. An active medicine may be thus rendered inert; or one which is mild in its operation may be so changed as to operate with hazardous energy.

The same precaution, as to cleanliness, is also requisite with respect to the minim measure, when the medicines are directed to be administered in a form which requires its employment.

FUMIGATIONS AND DISINFECTANTS.

It is necessary to preserve the sick-room free from all smells, and in as pure a state as possible. But this is difficult to be done when typhoid fever is present, or when any disease which is under treatment is accompanied with ulcers on the legs or on other parts of the body; and the difficulty is increased when the complaint is cancer, or when mortification occurs. In such cases, chloride of lime should be sprinkled over the floor of the room; and dishes containing it mixed with water placed in different parts of the apartment, and frequently replenished.

Whenever infectious or contagious fevers occur, fumigations are employed to prevent the spreading of the deleterious effluvia which emanate from the bodies of the invalids, and the extension of the diseases.

They are also necessary after these diseases; for the tenacity with which the infectious matter adheres to the substances in the sick-room is scarcely credible.

It is often, therefore, of as much importance to purify an apartment and its furniture after the termination of an infectious disease, as during its existence. In this case, the fumigation with chlorine about to be described should be used after the floor of the room and every solid thing in it have been washed with soap and water; and all bright metallic substances, such as pokers, tongs, and fenders, have been removed from it. The walls should afterwards be white-washed, or fresh painted or papered, and the room thrown open to the air for some time before it is again inhabited.

It may be said that *fumigations* are not to be solely relied upon; and that they ought never to supersede ventilation or cleanliness. Whilst this must be admitted, it would be absurd to deny their utility; consequently, their nature and the mode of employing them should be understood.

Fumigations of the most varied kind have been suggested and employed for this purpose; namely, *Pastiles*, *Tobacco*, *Camphor*, *Vinegar*, *Ammonia*, the *Mineral Acids*, and *Chlorine*.

Pastiles, *Tobacco* and *Camphor*, are unworthy of the slightest confidence as agents for neutralizing infection. Merely to diffuse an agreeable smell throughout the sick apartment, pastiles and camphor may very properly be employed, but further than this, they ought not to be relied on.

Vinegar is, not without reason, regarded as possessing some chemical influence in decomposing infectious and contagious matters; and, consequently, it is almost invariably sprinkled over the floor of the rooms of those suffering under infectious diseases; or the vapor of hot vinegar is diffused through their apartments. It is thought to be still more salubrious, and a more powerful disinfectant, when it holds camphor or aromatic oils in solution; hence the great popularity of the preparations called *Aromatic Vinegar* and *Thieves' Vinegar*.

Vinegar, in this state of combination, is extremely agreeable and refreshing, both to the invalid and the attendants of the sick-room. The benefit which it produces depends upon a certain degree of stimulus imparted to the sensitive nerves, which are generally in a low condition in an infectious atmosphere: but, as a chemical agent, its powers are too feeble to be followed by much benefit.

The most efficacious *fumigation* which has yet been proposed is *chlorine*. This is extricated from the decomposition of muriatic acid by peroxide of manganese; but this is too expensive a process for ordinary occasions. The best materials, and the proportions of them, for extricating chlorine at a cheap rate was ascertained by Dr. Faraday, in the disinfection of the Millbank Penitentiary:—namely, *two ounces* of powdered peroxide of manganese, mixed with *ten ounces* of chloride of sodium (sea-salt), and *six ounces* of strong sulphuric acid, diluted with *four ounces* of water. This quantity of materials is sufficient for purifying a room forty feet by twenty. The mixture should be put into a porcelain cup or basin, which should be placed in a pipkin of hot sand. The doors and the windows of the room being shut, the fumigation may be left in it for ten or twelve hours; after which, both the doors and the windows should be thrown open, to admit a current of air to pass through the apartment and carry off the chlorine.

One objection exists to the employment of the above mode of extricating chlorine in apartments which are inhabited; namely, its powerful irritant influence on the lining or mucous membrane of the air tubes in the lungs, and the cough which it excites. In order to obviate these inconveniences, the *chloride of lime* is employed; which, by attracting the carbonic acid of the air, and causing the conversion of the lime into a carbonate of lime, separates the chlorine in a free or gaseous state. The chloride of lime should be mixed with water, in the proportion of one part to forty of the water, in a flat dish or plate, so as to expose a large surface to the action of the air; and the dish holding this mixture should be placed on a table, on the *leeward* side of the bed of the patient. The floor of the sick-

room should be also sprinkled with it; and rags, moistened with it, suspended in different parts of the room. The solution of chloride of soda may be employed instead of the chloride of lime.

If the putrid odor in a sick-apartment do not arise from the general state of the system of the invalid, but from ill-conditioned ulcers and sores, these should be washed and poulticed with the solution of chloride of soda, which operates not only by destroying the fætor, but by improving the condition of the sores.

Chlorine, even when extricated from chloride of lime, or from chloride of soda, is apt to excite coughing in those unaccustomed to breathe it. But the nurse should be made aware of this fact; and should so apportion the quantity of the materials on the first introduction of it into the room, that it may cause no such effect: and by afterwards adding to the number of the dishes in which it is distributed through the room, no inconvenience will result; the lungs being thus gradually accustomed to the irritant impression.

The decomposition and consequent development of the chlorine is much quickened by placing a piece of coarse calico in the bottom of the vessel containing the chloride of lime or the chloride of soda and water.

Dr. Ellis thus speaks of some of the best known disinfectants:

"M. Boujeau directs charcoal, well powdered, two pounds; sulphate of iron, one pound; to be mixed, of which two or three tablespoonfuls are to be placed in the chamber vessels used by the sick.

"Dr. Procter has great confidence in iodine placed in open saucers about the room, or gently volatilized by moderate heat.

"Burnett's fluid consists of a saturated solution of chloride of zinc.

"Collins's disinfecting powder contains dry chlorinate lime, two parts; burnt alum, one part; used dry or moistened with water.

"Condy's fluid is a solution of the alkaline permanganates.

"Ellerinann's deodorizing fluid consists of a solution of the perchloride of iron and the chloride of manganese.

"Ledoyen's disinfectant is a solution of two troy ounces of nitrate of lead in a pint of water.

"Siret's compound No. 2 contains sulphate of iron, 20 parts; sulphate of zinc, 10 parts; oak-bark, powdered, 4 parts; tar and oil, each one pint; made into balls. Used for deodorizing cesspools.

"Professor R. E. Rogers advises a mixture of quick-lime and sulphide of iron.

"The U. S. Army disinfectant consists of a powder of common salt and binoxide of manganese in packages, upon which is to be poured in a shallow dish a solution of sulphuric acid and water

At the present time carbolic acid is largely used as a disinfectant. It is certainly very efficacious.

Earth closets are now being introduced, and must in time become very popular.

"In the *commode*, the apparatus and earth reservoir are self-contained, and a movable pail takes the place of the vault. This must be emptied as often as necessary, and the contents may be applied to the garden or field, or be allowed to accumulate in a heap under cover until wanted for use. This accumulation is inodorous, and rapidly becomes dry. For use in bedrooms, hospital wards, infirmaries, &c., the *commode* is invaluable. *It is entirely free from those faint, depressing odors common to portable water-closets and night-stools*; and through its admission one of the greatest miseries of human life, the foul smells of the sick-room, and one of the most frequent means of communicating infection, may be entirely prevented. It is invariably found that if any failure takes place, it arises from the earth not being properly dry. Too much importance cannot be attached to this requirement."

NURSES.

When all the arrangements are completed in the sick-room, little benefit can be anticipated if a proper nurse be not obtained to render them available to the invalid. Before describing the qualifications requisite to constitute an efficient nurse, we cannot avoid embracing this opportunity of mentioning the great difficulty of procuring properly instructed nurses in this country. It is, indeed, to be greatly lamented, that, amidst the numerous improvements which characterize the present era, the females who assume to themselves the character of sick nurses, and are employed as such, are still left to acquire information, respecting the important duties which their office demands, from imperfect experience, or from accident. We expect that the skill of our medical attendants shall be certified by diplomas and licences before they are permitted to practice; but we leave their orders to be executed by the ignorant and the prejudiced, who not only too often fail in performing what they are ordered, but who, with the usual temerity of ignorance, presume to oppose their own opinions to those of the physician.

In hiring a sick-nurse, the qualifications which should regulate our choice, refer to *age, strength, health, temper, disposition, habits, and education.*

1. *Age.* She should not be under twenty-five, nor above fifty

years of age. This period is fixed upon, on account both of the physical powers and the moral conduct of the individual. Under twenty-five, the strength of a woman has not reached its maturity, and is scarcely adequate for lifting patients in and out of bed, and for many other duties which require strength, connected with the office of a nurse; but the strength and the muscular power in females begin to fail after fifty-five, when the natural transition from maturity to decay takes place. There is also a greater proneness to disease at this age than in the middle period of life.

2. *Strength.* Whilst strength is requisite, the frame should be such as to indicate activity. The stature should not exceed the medium degree; a little below this being less exceptionable than a little above it, provided the appearance displays a frame well knit together. Obesity and a heavy movement are objections, as they are frequently connected with self-indulgence, defective energy, and an inability to keep awake, or to be easily aroused from sleep.

3. *Health.* None of the qualifications of a sick-nurse are of more importance than health. An individual who herself requires attention is ill calculated to attend upon others.

4. *Temper and Disposition.* It is scarcely requisite to say that an attendant upon the sick should possess a happy, cheerful, equal flow of spirits; a temper not easily ruffled; and kind and sympathetic feelings; but, at the same time, not such as to interfere with firmness of character.

When the mind is weakened, and the nervous system morbidly susceptible, a harsh look or an unkind expression sinks deep into the mind of the invalid; and when the disease is of a nervous kind, a melancholy, anxious, or forboding look, or one which in any degree indicates an apprehension of danger, either in the physician or the nurse, instantly excites alarm in the mind of the invalid; and may counteract, in a great measure, the influence of the medical treatment.

On the other hand, a collected, cheerful expression of countenance, in the attendant on the sick, is likely to inspire hope, and to aid the efforts of the physician for the recovery of his patient.

The general disposition of a sick-nurse should be obliging. Every little office which the invalid may require to be done, should be performed at once, and without the smallest apparent reluctance, even when the necessity for its immediate performance is not absolute. There is also an earnestness of manner, which should, if possible, be obtained, or acquiesced in, by the sick-nurse; as it impresses the idea that she feels deeply interested in the case; a circumstance which is always highly appreciated by the patient.

With respect to gossiping, it is a detestable habit under any circumstances ; but, in a nurse, it may be productive of the greatest danger, produce family feuds, and a thousand other evils.

5. In her *habits*, a sick-nurse should be sober, active, orderly, and clean and neat in her person.

The *activity* essential for a good nurse does not imply a bustling or fidgety manner, but a quiet, steady method of proceeding in the performance of her duties, equally devoid of fluster, turbulence, or noise. This activity is generally associated with orderly habits ; a most valuable qualification, and without which the sick-room becomes a scene of confusion and disgust. Every medical man must have witnessed this state of disorder with regret : when, on visiting his patient, he finds no chair to sit upon, until some article of bedding, or of clothing, be removed from it, and the seat dusted with the apron of the nurse ; and when a former prescription, or any thing else, is wanted, he must wait until the nurse rummages out half a dozen of drawers in search of it.

Another quality, usually conjoined with activity and orderly habits in a nurse, is cleanliness in her own person, and in that of her charge, as well as that of the sick-room. The dress of a nurse should be simple and neat, without trimmings. Nothing is more out of place than a fine lady attempting to perform the duties of a nurse. Whatever may be the stuff of which it is made, the apron should have pockets in it, in the fashion of the Parisian servants. Neither the gown, nor any of the outer garments, however, should be woollen, especially if the disease be infectious ; as owing to its spongy tissue, woollen is apt to absorb and retain the infection. When the disease is decidedly infectious, the apron of the nurse should be made of glazed calico, or oiled silk.

Every nurse should be able to read and write. The better informed, the less likely is she to be biased by low prejudices. A nurse, also, who cannot read, may be the cause of much mischief in the administration of medicines.

The term "*an experienced nurse*," is supposed to comprehend every good quality. Experience deserves to be much and justly prized in a nurse, were the term not too frequently misapplied, and confidence placed in the nurse merely because she is advanced in years and has seen much, without any inquiry as to her capacity for observing, and making a proper use of what she has seen. Number of years and much opportunity are not a guaranty of wisdom nor of true experience. Age may undoubtedly be supposed to afford the means of enlarging the ideas ; but every one is not endowed with the power of benefiting by the best opportunities ; and it is here that the advan

tages of education are displayed in the nurse. Without it, seventy years may have only added to her sum of stupidity. The poor woman has had eyes; but she has never fixed them with attention upon what was before them; and when she has accidentally observed, having no capacity for generalization, the observations, like most isolated facts, have been lost. She is a mere creature of routine; a machine moved by custom or prejudice; whereas the properly educated nurse acquires the power of observing and comparing, and consequently of reflecting and drawing proper conclusions.

COOKERY FOR THE SICK AND THE CONVALESCENT.

The cookery for the sick and the convalescent is confined to the simple processes of *boiling*, *baking*, and *roasting*. Before entering into the details of Sick-room Cookery, therefore, it will be useful to offer a few remarks upon the principles which render these processes serviceable in the preparation of food.

1. *Boiling* softens the animal fibre, and enables it to be more readily and effectually acted upon by the juices of the stomach; but, at the same time, it robs it of some of those nutritive matters which are soluble in boiling water. Much depends, however, on the slow or the rapid manner in which the process is conducted. If the boiling be too quick, it coagulates the albuminous matter of the meat, renders the flesh on the outside hard, whilst the interior is not sufficiently done; consequently, quick boiling diminishes its digestibility. In boiling meat, the water should scarcely be brought to the boiling temperature; and it should be long kept at a lower than a boiling point of heat, or at that state which approaches more to simmering than to boiling. Every kind of meat for invalids, except poultry, should be put on the fire with cold water, and very slowly boiled.

The nature of the water is also of some importance. Beef or mutton boiled in hard water is always more tender and juicy than when soft water is employed; a fact, probably, depending on the solvent properties of the water increasing in the ratio of its density. Fish, on the contrary, is rendered firm in the ratio of the hardness of the water in which it is boiled. Hence, fish boiled in sea-water, or in water containing much salt, is always firmer and more highly-flavored than that which is boiled in soft water, or water without salt.

Vegetables require rain or soft water, with the addition of salt.

In general, they are rendered indigestible from being too little boiled. This is especially the case with respect to the cabbage, the cauliflower, brocoli, turnips, and peas; which, too frequently, are cooked rather to please the eye than to afford nutriment. For the sick-room, vegetables should be boiled in two waters; when too little boiled, they prove highly injurious.

2. *Stewing* requires the heat to be kept under the boiling point; and a small quantity of water only is required. It softens the meat, and renders it more readily acted upon by the juices of the stomach than when it is boiled; stewed meat, therefore, is a good form of cookery for the convalescent.

3. The process of *Baking* is inadmissible for the preparation of animal food for either the sick or the convalescent; but it may be employed in the preparation of light puddings for the latter. The surface of the puddings, however, should not be browned by the aid of butter.

4. *Roasting* softens the tendinous parts of animal food better than boiling, and it retains more of the nutritive principles of the meat; hence, if the meat be neither too little nor too much done, roasted is more nutritive than boiled meat; but it is less easily digested. This fact is demonstrated by the comparative loss which takes place in these two modes of cooking. It has been ascertained that mutton loses one-fifth and beef one-fourth of its weight by boiling; but both lose only a little more than one-sixth in the process of roasting. The digestibility of the meat, however, being in the ratio of the softness of the fibre, that property is increased by slow boiling. It has, of late years, been much the fashion to regard under-done roasted meat well adapted for weak stomachs; but no opinion is more erroneous.

The processes of *frying* and *broiling* are wholly incompatible in cookery for the sick-room.*

The cookery for those actually suffering under the pressure of disease differs considerably from that which is required to repair the ravages of previous illness, and to restore the vigor and the strength of the body in convalescence. The following directions are, therefore, arranged under two distinct heads, namely,

1. Cookery for the Sick-room.

2. Cookery for Convalescents.

1. The cookery for the sick-room comprehends *farinaceous preparations, animal teas, broths, milks, and drinks.*

FARINACEOUS PREPARATIONS.

The whole of these may be regarded as modifications of starch,

* Vide Human Health, by R. Dunglison, M. D.

more or less pure. They are not capable of conveying much nourishment into the habit; and being mild, and completely devoid of stimulant properties, they are well calculated for the sick.

ARROW-ROOT MUCILAGE.

Arrow-root is a white, inodorous, insipid, light powder, procured from the tubers of the *Maranta arundinacea*, or arrow-root plant, and manufactured in the East and West-Indies, of which it is a native.* The powder is a pure starch, which, although insoluble in cold water, yet forms a mucilage with boiling water. This *mucilage* is made by rubbing the *arrow-root powder* with a little cold water in a basin, by means of the back of a spoon, until it is completely mixed with the water; then pouring boiling water over it, at the same time stirring it assiduously until a soft, gelatinous, tenacious mucilage is formed; and, lastly, boiling it for five minutes. A table-spoonful of the *arrow-root powder* is sufficient to make a pint of the mucilage. It may be moderately sweetened, and rendered more palatable by the addition of a little lemon-juice; but cinnamon powder, or any astringent substance, precipitates the starch, and destroys the smoothness of the mucilage; hence, if wine be ordered with it, Port-wine should not be used.

TOUS LES MOIS.

This is a species of starch prepared from the rhizomes or tubers of some species of *Canna*, either *C. edulis*, or *coccinea*, both of which are natives of Peru. It is converted into a mucilage, and used in the same manner as arrow-root, over which it possesses no superiority. The great advantage of both, indeed, as articles of diet for the sick, depends on the small quantity of nutriment which they convey into the habit. It is often useful to satisfy the prejudices of the friends of invalids, by the appearance of supplying nourishment, when it would prove injurious.

MUCILAGE OF SAGO.

Sago† is the pith of several species of Palms and Cycadeæ,

* In the island of Portland, the farina of the roots of the *Arum maculatum*, cuckow-pint, which grows abundantly there, is manufactured into starch, and sold under the name of British arrow-root. Much potato starch is also sold as arrow-root. The fraud, however, is not a hurtful one, as the properties of these starches do not materially differ. Potato starch mucilage sooner becomes sour than arrow-root mucilage.

† There are three varieties of Sago known in European commerce; namely—*Sago of the Maldives*, in brownish-grey grains, possessing few of the chemical properties of starch; 2, *Sago of New Guinea*, in grains of a brick-red hue, passing to dull white; it is a nearly pure starch; 3, *Malacca Sago*, of which there are three kinds—*a*, in fawn-colored grains,

natives of tropical climates: the best is that made by the Chinese at Malacca, and known in commerce by the name of *Pearl Sago*. It resembles roundish seeds, of a brownish-grey color, passing to pearl-white, or brick-red passing into dull-white. When soaked in water, at a moderate temperature, it absorbs from five to ten times its weight of water, swells, and becomes transparent. It consists of starch, with a small proportion of salt.

To make Sago into a proper *Mucilage* for the sick, an ounce or a table-spoonful of it should be macerated in a pint of water, in a pan placed on the stove, or on a *hot plate*, for two hours, and then boiled for fifteen minutes, stirring assiduously during the boiling. The Mucilage may be sweetened with *sugar*, and flavored with *lemon-juice*; or *milk* may be added to it, according to circumstances. Like other farinaceous mucilages, it affords very little nourishment; and is, therefore, well adapted for invalids laboring under acute diseases.

MUCILAGE OF TAPIOCA.

Tapioca is the pith of the roots of *Jatropha Manihot*, a native of Brazil, which, although combined with a poisonous principle in the fresh state, yet is easily freed from it by washing in cold water, after the roots are barked and crushed. The fecula is then dried and granulated. It resembles Sago; but it is less colored and in larger grains.

The mucilage of tapioca is prepared in the same manner as that of sago, and with the same proportions of tapioca and water; but tapioca is more soluble than sago, and, consequently, it requires only half the time for its maceration and boiling. It forms a semi-opaque mucilage, which may be sweetened and flavored in the same manner as sago.

MUCILAGE OF SALEP.

Salep is prepared from the cormi or bulbs of the *Orchis mascula*. It is imported chiefly from the Levant; but some is brought from India. It consists of a peculiar kind of gum, termed Bassorin, and Fecula. It is more nutritive than either Arrow-root or Sago, and consequently is better adapted for the convalescent than for the sick. The mucilage is prepared by dissolving the powdered Salep in hot water, with assiduous stirring, and adding to the solution sugar and milk.*

passing into grey; a pure starch, containing more salt than the other varieties; b, in rose-colored grains, in chemical characters the same as the former; c, in white grains, a very pure starch.

* Dr. Percival states that a mixture of Salep and flour makes excellent bread.—*Med. and Experimental Essays.*

GRIT-GRUEL.

Take three ounces of *Grits*,* wash them well in *cold* water, and, having poured off the fluid, put them into four pints of *fresh* water, and boil slowly, until the water be reduced one-half; then strain the whole through a sieve, to separate the mucilage from the undissolved part of the Grits.

OAT-MEAL GRUEL.

Take two ounces of *Oat-meal*, free from mustiness, and a pint and a half of *soft* water. Rub the meal in a basin, with the back of a spoon, in a moderate quantity of the water, pouring off the fluid after the grosser particles have subsided, but whilst the milkiness continues; and let this operation be repeated until no more milkiness is communicated to the water. Next put the washings into a pan, after having stirred them well, in order to suspend any fecula which may have subsided; and boil until a soft, thick mucilage is formed.

Both the gruel of grits and of oat-meal consist not only of the starch of the oat, but also of a small proportion of gluten; on which account, they are more nutritive than any of the feculaceous mucilages. They may be sweetened and acidulated, or mixed with milk, according to circumstances. Butter and honey, which are frequently added to these gruels, are inadmissible in inflammatory diseases.

Besides being excellent demulcent articles of diet, these gruels are usually employed as the vehicles for administering substances in the form of elyster; for which purpose they are better adapted than the purer starches, as they are not so susceptible of precepitation by astringent vegetable infusions and decoctions.

Gruel is apt to ferment when it is kept longer than twenty-four hours.

MUCILAGE OR JELLY OF ICELAND MOSS.

The *Iceland Moss* is a Lichen, named *Cetraria Islandica*, which grows on mountains, exposed situations in Iceland; in the north of Germany; and in other northern countries. It contains a bitter principle, which is useful, as a medicinal agent, in some diseases, but from which it should be freed, when it is to be employed as diet. This is to be effected by pounding the dried Lichen, and soaking it for twenty-four hours in tepid water containing a small quantity of carbonate of soda, and then pressing it forcibly in a coarse cloth; after which, if any bitterness remain, the process must be repeated.

* These are Oats freed from their cuticle or testa, and coarsely broken.

The Lichen, thus treated, is next to be put into water, in the proportion of *an ounce* to a *quart* of water; then slowly boiled down till one half the fluid is evaporated; and, lastly, strained through a sieve. The mucilage may be sweetened and acidulated; or it may be mixed with milk, in the same manner as the mucilages already noticed.

Any portion of the bitter may be separated by regulating the period of the maceration. When the bitter is not objectionable, it has one advantage; namely, that of enabling the stomach to digest more readily the mucilage, by the tone which it affords to that organ. The idea that it possesses any specific medicinal virtue for the cure of consumption is erroneous.

MUCILAGE OF CARRAGEEN—IRISH MOSS.

Carrageen is a *Fucus*, the *Chondrus crispus*, which grows upon rocks and stones in the sea, and is very common on the Irish coast. It has a tough, horny, flexible, crisp appearance; it almost wholly dissolves in water during boiling. One ounce of it, boiled in a pint and a half of water, is sufficient to form a semi-transparent, moderately consistent, nearly tasteless jelly; which, when sweetened and acidulated, or when mixed with milk, forms an excellent diet for invalids who require to have the strength supported.

MUCILAGE OF RICE.

Take one ounce of good Carolina rice, and, having washed it, macerate it for three hours in a quart of tepid soft-water, in a pan placed upon the stove, then boil the whole slowly for another hour, and strain through a sieve.

This mucilage may be sweetened and acidulated, or mixed with milk, in the same manner as the other feculaceous mucilages. It forms an excellent demulcent diet for the sick, especially in irritable conditions of the intestinal canal, and in diarrhœa; but it is a mistake to suppose that it possesses any astringent property.

The soluble part of rice is chiefly starch, which it contains in the proportion of eighty-five parts in the hundred. The less soluble parts are about five per cent. of parenchymatous matter; an animalized principle, amounting to rather more than three and a half per cent.; and some phosphate of lime. It is the animalized matter that affords any nutritive property which the rice possesses; but this is not taken up by the water in the above preparation; consequently, in a nutritious point of view, it is on an equality with the foregoing mucilages.

GROUND RICE.

Take a table-spoonful of ground rice, a pint and a half of milk, and half an ounce of candied lemon-peel. Rub the rice smooth with the milk, then add the lemon-peel cut into small pieces; boil for half an hour, and strain whilst the milk is hot.

This is an excellent nutritious beverage for the sick, when strict abstinence is not required; and for early convalescence.

SIMPLE BREAD PANADA.

Put any quantity of grated, stale bread into enough of water to form a moderately thick pulp; cover it up and let it soak for an hour; then beat it up with two table-spoonsful of milk, and a small portion of refined sugar, and boil the whole for ten minutes, stirring all the time.

This may be eaten by the sick, laboring under any disease in which abstinence is not strictly enjoined.

ANIMAL PREPARATIONS

HARTSHORN JELLY.

Take *six ounces* of hartshorn shavings, cut into small pieces; boil them in *four pints* of water down to *two pints*; strain, and add to the liquor, whilst hot, *two table-spoonsful* of lemon-juice, *six ounces* of white sugar, and *two glasses* of Sherry wine. This forms an excellent light nutriment for the sick and convalescent, when wine is not improper. Without the acid and the wine, but with an equal quantity of milk, it is an excellent substitute for the breast-milk, for infants who are unfortunately brought up by hand.

BEEF-TEA.

Take *half a pound* of good rump steak, cut it into *thin* slices, and spread these in a hollow dish; sprinkle a little salt over them, and pour upon the whole a *pint* of boiling water. Having done this, cover the dish with a plate, and place it near the fire for an hour; then throw the sliced beef and the water into a pan, cover it, and boil for fifteen minutes; after which, throw the whole contents of the pan upon a sieve, so as to separate the beef-tea from the meat.

The quantity of water directed to be used is too little for the strength of the beef-tea usually proper for invalids; but it is suf-

ficient to extract all the soluble matter of the beef; and tea can be reduced to the strength required by the addition of boiling water.

1001. *Liebig's Beef-tea*.—"One pound of lean beef, free of fat and separated from the bones, in the finely chopped state in which it is used for mince-meat, is uniformly mixed with its own weight of cold water slowly heated to boiling; and the liquid, after boiling briskly for a minute or two, is strained through a towel from the coagulated albumen and fibrin, now become hard and horny. Thus we obtain an equal weight of the most aromatic soup, of such strength as cannot be obtained even by boiling for hours from a piece of flesh." This is to be seasoned to taste.

1003. *Marcet's New Process of Beef-tea*.—"Take one pound of lean beef, cut into small pieces; put into a pint of cold water. To this add:

Hydrochloric Acid (sp. gr. 1.15).....58 grains,
or about 50 minims,

Boudault's Pepsine.....50 grains.

"Bring it up to about 100° Fahrenheit, and maintain it at that temperature in a water-bath until the meat becomes disintegrated; then strain it, and neutralize with 80 grains of bicarbonate of soda.

"This makes a palatable and exceedingly digestible nourishment. In cases of fever, where the acid is rather desirable than not, the editor has found it quite agreeable to the patient, without the addition of the soda."

1004. *Eggs, Cream, and Extract of Beef*.—"Wash two ounces of the best pearl sago, until the water poured from it is clear; then stew it in a half pint of water until it is quite tender and very thick; mix with it half a pint of good boiling cream and the yolk of four fresh eggs, and mingle the whole carefully with one quart of good beef-tea, which should be boiling. Let cool sufficiently when it is ready for use."—*Ellis*.

CHICKEN-TEA.

Take a small chicken, free it from the skin and from all the fat between the muscles; and having divided it longitudinally into two halves, remove the whole of the lungs, the liver, and everything adhering to the back and the side bones. Then cut it, bones and muscles, by means of a strong, sharp knife, into as thin slices as possible; and, having put these into a pan with a sufficient quantity of salt, pour over them a quart of boiling water, cover the pan, and simmer, with a slow fire, for two hours; lastly, put the pan upon the stove for half an hour, and strain off the tea through a sieve.

Both of these animal decoctions are of a strength proper for any invalid whose condition, during the progress of actual disease, admits of animal diet in its lightest form. When concentrated with some farinaceous additions, and slightly spiced, they are equally useful in convalescence.

VEAL-TEA.

This may be made in the same manner as beef-tea, using a pound of fillet of veal, free from fat and sliced, and a *pint and a half* of boiling water, and boiling for *half an hour* instead of *fifteen minutes*. It may, also, be made with the same quantity of the fleshy part of a knuckle of veal.

By boiling down the knuckle-of-veal tea, whilst the meat is in it, to one-half, and straining, the decoction gelatinizes; and, when it is poured into small cups, it will keep good for several days. By adding an equal quantity, or more, of *boiling* water to a cupful of this jelly, a moderate quantity of veal-tea for one individual is prepared in two minutes.

MUTTON-TEA.

This is prepared with a pound of good mutton, freed from the fat and cut into thin slices, and a pint and a half of boiling soft water poured over it, in the same manner as for beef-tea; but it requires to be boiled, after the maceration, for half an hour, before it is strained through a sieve.

If the invalid desires the addition of barley, an ounce of good pearl barley, washed and macerated in boiling water for an hour, may be boiled with the mutton-tea, and the undissolved barley separated on straining.

1011.—CHICKEN BROTH.

“Clean half of a chicken, and pour on it one quart of cold water; add a little salt and one tablespoonful of rice; cover the vessel closely, and boil for two hours; throw in near the end of the boiling a little parsley, chopped fine; skim the broth before using.

“This is one of the most valuable articles of diet at the command of the physician in the low stages of disease, when the patient’s system requires support, but his digestive powers will not admit of solid food.”—*Ellis*.

1014.—MULLED WINE.

“Take two drachms of bruised cinnamon, half a nutmeg grated, ten bruised cloves, and half a pint of boiling water; infuse one

hour; strain, and add of hot port or hot sherry wine (or of good domestic wine) one pint, and white sugar, one ounce. Mix.

“This is a mild stimulant drink, used in the convalescence from low forms of disease.”—*Ellis*.

TURTLE-SOUP.

Plain turtle-soup, made from the green turtle, *Chelonia mydas*, without wine or spices, is sold in pots, and requires only the addition of water to reduce it to a proper consistence for the use of the sick and convalescents. It is extremely nutritious, and of very easy digestion; but it should be given only in small quantities, at moderate intervals. In cases of great debility, the consequence of long continued chronic diseases, either wine or brandy may be added to the soup; but the propriety of such an addition, and the quantity requisite in each case, must be left to the judgment of the medical attendant.

PREPARATION OF BEVERAGES.

DISTILLED WATER.

This, the purest state of water, may be readily obtained by fixing a curved tin tube, three or four feet long, to the spout of a tea-kettle, and conducting its free end into a jar placed in a basin of cold water, and enveloped with a wet towel. The steam thus condensed is distilled water. The softer the water is, the better solvent it is of all soluble animal and vegetable substances; and distilled water, being free from every foreign ingredient, is necessarily the softest of all water, and consequently the best adapted, not only for diluting in febrile affections, but for pervading the minutest vessels, and improving their secreting powers. Its use is recommended in diseases of the kidneys, in gout, scrofula, consumption, and cancerous affections.

Distilled water is mawkish to the taste; but this is easily corrected by pouring it from one jug to another, successively, for ten or fifteen minutes, so as to involve in it a quantity of atmospheric air.

The temperature of water, when low, is most agreeable to the palate, yet it should approach to that of the body; and, therefore, when the diluent influence only of water is required its temperature should not be under 60 deg., nor above 70 deg. When the heat of the body, however, is considerable, and the skin dry, in febrile diseases, water at as low a temperature as it can be obtained in the fluid state may be used.

TOAST-WATER.

Toast thoroughly, but not to a cinder, half a slice of a loaf, of the usual size and of a day or two old, put it into a jug, and pour over it a quart of water which has been boiled and cooled; and, after two hours, pour off the water gently from the bread. A small piece of orange or of lemon-peel, put into the jug at the same time as the bread, is a great improvement to toast-water.

The toast, in this case, communicates taste and color to the water, without affecting its diluent properties. The reason for employing water which has been boiled is to bring the fluid as near as possible to the state of distilled water.

Toast-water may be used at will in every febrile affection. It diminishes the heat of the mouth, the throat, and the stomach; and, by sympathy, that of the whole body.

APPLE-TEA OR WATER.

Slice two large, not over ripe, apples, and pour over the slices a pint of boiling water. After an hour, pour off the fluid, and, if necessary, sweeten with a moderate quantity of refined sugar.

LEMON-PEEL TEA OR WATER.

Pare the rind of one lemon, which has been previously rubbed, with half an ounce of refined loaf sugar, put the peelings and the sugar into a jar, and pour over them a quart of boiling water. When cold, pour off the fluid, and add one table-spoonful of lemon-juice. If wine be not improper, a glass of Sherry may be added, instead of the lemon-juice.

ORGEAT.

Blanch two ounces of sweet almonds, and four bitter almonds. Beat them in a mortar with a little orange-flower water into a paste, and rub this with a pint of milk diluted with a pint of water, until an emulsion is formed. Strain, and sweeten with sugar. The Bitter Almond, when treated with water, develops a volatile oil, which has the odor of the peach-blossom, and contains prussic acid. In some individuals, the bitter almond causes an eruption on the skin, closely resembling nettle-rash; consequently this fact should be ascertained in reference to the individual for whom the orgeat is intended, before it be ordered.

RASPBERRY VINEGAR WATER.

This is merely diluted raspberry vinegar. It is generally made too acid.

All of these drinks are good diluents in fever, and may be taken at the pleasure of the invalid.

LEMONADE.

Take the juice of two lemons; add it to a quart of boiling water, having the rind of one of the lemons in it, in a covered jar, and sweeten it moderately with refined sugar.

BARLEY-WATER.

Simple Barley-Water.—Take two ounces and a half of pearl barley, and four pints and a half of soft water. Wash first the barley with cold water, to remove from it every foreign matter; and then pour upon it half a pint of the water, and boil for fifteen minutes. Throw this water away; and, having heated the four remaining pints of the fluid, pour them upon the barley, and boil down to two pints, and strain.

Compound Barley-Water.—“Take two pints of simple barley-water, two ounces and a half of figs, sliced; five drachms of liquorice root, sliced and bruised; two ounces and a half of raisins, and a pint of soft water. Boil down to two pints, and strain.”

These decoctions are not only good demulcent diluents, but, in cases where a very moderate degree of nutriment is not objectionable, they answer the purpose of diet.

Simple barley-water, when mixed with an equal quantity of milk and a small portion of refined sugar, is a good substitute for the breast-milk, for infants who are brought up with the spoon.

When an ounce of gum is dissolved in a pint of simple barley-water, an excellent beverage is formed for cases of strangury from blistering plaster; and in gravel.

ALMOND EMULSION.

Take one ounce and a quarter of sweet almonds, blanched; five drachms of sugar; and a quart of soft water. Beat the almonds with the sugar, in a porcelain mortar, into a smooth pulp, adding the water gradually, and stirring assiduously until the whole of the fluid is added; then strain through linen.

An excellent demulcent in febrile affections.

MARSH-MALLOW TEA.

Take four ounces of dried roots of the marsh-mallow (*Althæa officinalis*); two ounces of raisins, freed from the seeds; and five

pints of boiling water. Boil slowly down to three pints, and when the sediment has subsided, pour off the clear liquor.

This is an excellent demulcent drink in diseases of the kidney with a tendency to gravel.

FLAXSEED TEA.

Take an ounce of flaxseed, *not bruised*; two drachms of liquorice root, bruised; and one pint of boiling soft water. Place the jug containing these ingredients, covered, near the fire for four hours, and then strain through linen or cotton.

The mucilage resides in the husk, and the fixed oil in the kernel of the flaxseed; and, therefore, the seeds ought not to be bruised. When flaxseed is boiled, the fixed oil is extracted, and renders the decoction both nauseous and stimulant.

Flaxseed tea is a useful demulcent drink in coughs, and affections of the urinary organs; but it should be made daily, as it soon gets ropy, and spoils.

RENNET-WHEY.

Infuse a moderate-sized piece of rennet* in a sufficient quantity of boiling water to abstract all the soluble matter; separate the fluid, and stir a table-spoonful of it into three pints of milk; cover up the mixture with a clean cloth, and place it before the fire until it forms a uniform curd. Divide this curd with a spoon, and, pressing it gently, separate the whey.

Good whey should be nearly transparent, of a pale straw-yellow color, and should have a sweetish taste. It constitutes ninety-two parts in one hundred of the milk; and, besides water, contains sugar of milk, and some salts. It is an excellent diluent in febrile affections. When boiled down to one half, it proves nutritive as well as diluent.

VINEGAR AND TAMARIND WHEYS.

A small wine-glassful of vinegar, sweetened with a dessert-spoonful of Muscovado sugar; or two table-spoonsful of tamarinds, stirred into a pint of boiling milk, and the whole boiled for fifteen minutes, and strained, form these wheys. They are useful refrigerant drinks in febrile diseases.

* Rennet is a production of the inner or mucous membrane of the stomach of a calf. Its action in coagulating milk is not understood. It does not depend on the acid which the rennet contains; but on a peculiar substance, which has been named *Chymosine*. The quantity of liquid rennet necessary to curdle 1000 grains of milk is only eight drops; but it requires a heat of 68 deg. of Fahrenheit; and its action is aided by the acidity of the rennet.

WHITE WINE WHEY.

Take two-thirds of a pint of good milk, and dilute it with as much water as will make up the pint.

Take two glasses of sherry wine, or any other good white wine, and a dessert-spoonful of Muscovado sugar.

Place the milk and the water in a deep pan upon the fire; and, watching the moment when it boils, which is known by a scum rising to the edge of the pan, pour into it the wine and the sugar, and stir assiduously, whilst it continues to boil for twelve or fifteen minutes. Lastly, strain the whey through a sieve.

This is an excellent mode of administering wine in small quantities in low fevers, and in cases which demand a moderate degree of excitement. It may be drunk either cold or tepid, in a wine-glassful at a time.

MUSTARD-WHEY.

Take half an ounce of bruised mustard seeds, and one pint of milk; boil them together until the milk is curdled, and strain to separate the whey.

This whey has been found to be a useful drink in dropsy; it stimulates the kidneys, and, consequently, augments the urinary secretion. It may be taken in a tea-cupful at a time.

MIXTURE OF SPIRIT OF FRENCH WINE.

Egg Brandy. Take four ounces of French brandy, four ounces of cinnamon water, the yolks of two eggs, half an ounce of purified lump sugar, and two drops of oil of cinnamon. Mix the yolks of the eggs first with the water, the oil, and the sugar, agitating assiduously; and then add the brandy by a little at a time, until a smooth fluid is formed.

This is an excellent mode of administering brandy in the sinking stage of Typhus and other low fevers.

ARTIFICIAL GOATS' MILK.

Take an ounce of fresh suet, cut into small pieces, and tie them in a muslin bag, large enough to leave the morsels free from compression; boil this in a quart of cow's milk, sweetened with a quarter of an ounce of white sugar-candy.

This is an excellent article of diet in scrofulous emaciation, especially when ordinary articles of food pass through the bowels nearly undigested. It is also useful in the later stages of pulmonary consumption. It may be used for infants who are unfortunately brought up by the spoon.

ARTIFICIAL ASSES' MILK.

Take half an ounce of gelatine; dissolve it, by the aid of heat, in a quart of barley-water; add one ounce of refined sugar; then pour into the mixture a pint of new milk, and beat up the whole with a whisk.

It should be drunk warm, and exercise taken after it. It may be also prepared by dissolving two ounces of sugar of milk in one pint of tepid skimmed cow's milk. These, however, are but poor substitutes for asses' milk; which is one of the best restoratives in convalescence from severe disease. When taken in too great quantity it is apt to cause diarrhœa.

MILK AND SODA WATER.

Heat, nearly to boiling, a tea-cupful of milk, and dissolve in it a tea-spoonful of refined sugar; put it into a large tumbler, and pour over it two-thirds of a bottle of good soda-water.

This is an excellent mode of taking milk when the stomach is charged with acid, and consequently is apt to feel oppressed by milk alone.

BUTTERMILK.

When buttermilk is newly churned, it is a wholesome, delicious, and cooling beverage in fever or any disease of excitement; but, as it cannot be procured in large towns, and not always in the country, the method of making it in small quantities, daily, should be understood. It is readily prepared by putting a quart of new Milk into a bottle which will hold half a gallon, corking the bottle, and covering it with a towel in such a manner, that, by drawing alternately each end of the towel, the bottle can be rolled upon a table. This movement should be continued until such time as all the butter is separated, which is known by its appearing in clots or masses swimming in the milk. During the rolling, it is necessary to open the bottle occasionally to admit fresh air into it, as that is essential for the formation of the butter. When the process is finished, all the butter should be carefully separated from the buttermilk.

Buttermilk may be drunk at pleasure.

SAGO POSSET.

Put two ounces of sago into a quart of water, and boil until a mucilage is formed; then rub half an ounce of loaf-sugar on the rind of a lemon, and put it, with a fluid drachm (a teaspoonful) of tincture of ginger, into half a pint of sherry wine; add this mixture to the sago mucilage, and boil the whole for five minutes.

This is an excellent cordial where acute diseases, not of an inflammatory kind, have left the body in a state of great debility. A large wine-glassful may be taken at once, at intervals of four or five hours.

COOKERY FOR THE CONVALESCENT.

This comprehends farinaceous and animal preparations of a more nutritious and stimulant nature than is admissible for the sick-room; but, at the same time, considerably within that which is usual and not improper in a state of health.

FARINACEOUS PREPARATIONS.

These are not solely modifications of starch; but they admit of the presence of gluten and other components of the *Cerealix*. They are rendered more nutritive by the addition of milk and other animal substances of a moderately stimulant character.

BOILED FLOUR AND MILK.

Knead any quantity of wheaten flour with water into a ball, and tie the whole firmly in a linen cloth; put it into a pan with water, and boil it slowly for twelve hours. Place it before the fire to dry; and afterwards, on removing the cloth, separate a thick skin, or rind, which has formed, and again dry the ball.

A table-spoonful or more of this, grated and boiled with a pint of milk, forms an excellent article of diet in convalescence from diarrhœa, or from dysentery, and in cases of emaciation.

ARROW-ROOT PUDDING.

Take a table-spoonful of arrow-root powder, rub it with a little cold water in the same manner as in making the mucilage, and add to it, stirring assiduously, a pint of boiling milk. With this mucilage, mix the contents of one egg, and three tea-spoonsful of powdered, refined sugar, which have been previously beaten up together. The pudding thus formed may be baked, or it may be boiled in a basin.

This is an excellent pudding for the early stage of convalescence. For a more advanced period, a table-spoonful of Scotch orange-marmalade is a good and agreeable addition to this pudding.

ARROW-ROOT BLANC-MANGE.

Make the mucilage in the usual manner, using three times the quantity of the arrow-root powder; then add milk in a moderate proportion; and having boiled down the mixture to a sufficient degree of thickness, pour it into a shape to cool and set; after which it may be turned out.

In convalescence, this *blanc-mange* may be eaten with currant-jelly, or with wine or lemon-juice and sugar. It is sometimes eaten with cream; but such an addition is improper in convalescence.

MILK OR BEEF-TEA ARROW-ROOT MUCILAGE.

This mucilage is made exactly in the same manner as the simple arrow-root mucilage, except that beef-tea, or milk, is used in the boiling state instead of water; and the mucilage is boiled for twenty minutes instead of five minutes.

Either of these preparations forms an excellent diet in the early stage of convalescence, and for delicate children.

FLUMMERY OR SOWANS.

Take a quart or any quantity of grits, or of oatmeal; rub the grits or the meal for a considerable time, with two quarts of hot water and leave the mixture for several days at rest, until it becomes sour; then add another quart of hot water, and strain through a hair sieve. Leave the strained fluid at rest until it deposits a white sediment, which is the starch of the oats; lastly, pour off the floating water, and wash the sediment with cold water. The washed sediment may be either boiled with fresh water, stirring the whole time it is boiling, until it forms a mucilage or jelly; or it may be dried, and afterwards, prepared in the same manner as arrow-root mucilage. Flummery should not be made in a metallic vessel.

Flummery is light, moderately nutritious, and very digestible; it is, consequently, well adapted for early convalescence. It may be eaten with milk or with wine, or lemon-juice and sugar.

OAT-MEAL PORRIDGE.

Sprinkle into a pint of water, kept boiling, small quantities of oatmeal, at short intervals, stirring assiduously, until a moderately consistent mixture is formed; and continue to boil, afterwards, for half an hour.

Oatmeal porridge, eaten with milk, is a moderately nutritive diet, well adapted for early convalescence, when there is no dyspeptic tendency. When the stomach is deranged, it is apt to prove acescent, and is improper.

RICE AND APPLES, OR SNOW-BALLS.

Instead of preparing this dish in the usual manner—namely, cutting the apples, freed from the rind and internal seed-cells, into quarters longitudinally, then surrounding them with rice, and boiling the whole in cloths—it is preferable to boil the rice in hot water rapidly, and after straining off the water through a cullender, to expose it for ten or fifteen minutes before the fire, and having stewed the apples separate from the rice, to mix them together with a very moderate quantity of sugar.

The rice thus prepared is more digestible, and assuredly much more palatable, than when it is run together into a paste. Too much sugar is apt to disagree with the stomachs of convalescents, and induce an attack of dyspepsia. The butter which is often added to this dish is improper in convalescence. With these precautions, rice and stewed apples form a dish well adapted for invalids recovering from acute disease.

BOILED BREAD PUDDING.

Grate half a pound of stale bread, pour over it a pint of hot milk, and leave the mixture to soak for an hour in a covered basin; then beat it up with the yolks of two eggs. Put the whole into a covered basin, just large enough to hold it, which must be tied in a cloth, and placed in boiling water for half an hour. It may be eaten with salt or with sugar; and, if wine be allowed, it may be flavored with a glass of Sherry.

SIMPLE RICE PUDDING.

Wash two table-spoonsful of good Carolina rice, and simmer them in a pint and a half of milk, until the rice is soft; then add the contents of two eggs, beaten up with half an ounce of sugar. Bake it for three-quarters of an hour in a slow oven.

In an advanced state of convalescence, two glasses of Sherry to the pudding, before it is baked, is an agreeable addition.

MACARONI OR VERMICELLI PUDDING.

Take two ounces of macaroni or of vermicelli, a pint of milk, and two fluid ounces (four table-spoonsful) of cinnamon-water; simmer until the macaroni or vermicelli is tender. Next, beat up three yolks of eggs and the white of one egg, an ounce of sugar, one drop of the oil of bitter almonds, and a glass of Sherry wine, in half a pint of milk; and add the mixture to the macaroni or vermicelli. Bake in a slow oven.

BATTER PUDDING.

Take a table-spoonful of wheaten-flour, a pint of milk, the yelk of two eggs, and half an ounce of sugar. Beat the yelks of the eggs with the sugar, and mix them with the milk and flour. This pudding should be boiled, in a basin tied in a cloth, in boiling water.

TAPIOCA PUDDING.

Beat the yelks of two eggs and half an ounce of sugar together, and stir the mixture into a pint of tapioca mucilage made with milk. Bake in a slow oven.

Sago, arrow-root, or millet-seed mucilage may be converted into light puddings in the same manner.

In advanced convalescence, these puddings may be eaten with wine.

MASHED CARROTS AND TURNIPS.

Boil the turnips and the carrots, peeled, separately, in three successive waters; then press strongly the water out of them, through a clean coarse cloth. Mash them together with enough of new milk to form them into a pulp, and season with salt. Place them before the fire until the surface seems dry.

This is an admirable dish for convalescents who are restricted to farinaceous and vegetable diet; and it is one which invalids get fond of. The author once ate of this dish for dinner daily, in convalescence from a severe disease, for several months; and he now prefers it to every other kind of vegetable food.

PLAIN BOILED VEGETABLES.

Almost every kind of vegetable may be eaten by the convalescent, if it is well boiled. All the cabbage tribe, turnips, carrots, and onions should be thoroughly boiled in two waters. If salt be added, and the boiling be brisk, in an uncovered vessel, green vegetables do not lose their color; and, whilst by this means they are well boiled, they remain pleasant to the eye.

ANIMAL PREPARATIONS.

RICE OR VERMICELLI, OR MACARONI SOUP.

Make a quart of beef-tea, in the manner already described, and boil it down one third; then add to it an ounce of vermicelli, or two ounces of macaroni, which have been previously well boiled in water,

and boil down the whole to one pint. The soup may be salted to the taste, and five grains of Cayenne pepper added to one pint of it; provided the condition of the invalid does not forbid the addition of so moderate a stimulant.

When rice is used instead of vermicelli or macaroni, it should be put into boiling water, and boiled rapidly in a close vessel; then thrown upon a cullender, and slightly dried before the fire. It should not be boiled with the soup, but added after the concentration of the soup, in quantity agreeable to the taste of the invalid.

This is an excellent soup for convalescents.

CHICKEN-BROTH.

When chicken-tea, is boiled down one half, with the addition of a little parsley or celery, and the yolk of an egg previously beat up in *two ounces* of *soft* water, it forms a soup much relished by the convalescent. It may be rendered still more palatable by the addition of some properly boiled rice, or vermicelli, or macaroni; and by the addition of *three or four grains* of Cayenne pepper, to a pint of the broth.

CHICKEN-PANADA.

Take the white meat of the breast and of the wings of a chicken which has been either boiled or roasted, free it from the skin, and cut it into small morsels; pound these in a mortar with an equal quantity of stale bread, and a sufficiency of salt; adding, by little and little, either the water in which the chicken was boiled, or some beef-tea, until the whole forms a thin, fluid paste: lastly, put it into a pan, and boil for ten minutes, stirring all the time.

A similar panada may be made with a slice from the under side of a cold sirloin of roasted beef; or from a leg of cold roasted mutton. Either should be freed from fat and skin; and the gravy, kept until the fat is thrown in a cake and separated, may be added to it.

This panada is a nutritive article of diet for convalescents and delicate children.

RICE AND GRAVY.

Take the gravy from a leg of roasted mutton, or from a sirloin of roasted beef; leave it at rest until the fat forms a cake on the surface; remove this; and stir into a tea-cupful of it as much well-boiled rice as will suffice for a meal. This is also a wholesome diet in early convalescence for delicate children.

GLOUCESTER JELLY.

Take of rice, pearl barley, sago, and gelatine, each an ounce,

simmer the whole in three pints of water until they are reduced to two pints, and strain. When cold, the decoction forms a strong jelly, which may be dissolved in warm milk or in beef-tea, or melted in hot water, and flavored with wine and sugar.

SAGO MILK.

Soak an ounce of sago in a pint of cold water for an hour, pour off this water, and add a pint and a half of good milk, and boil slowly until the sago is well incorporated with the milk.

MUTTON BROTH, WITH VEGETABLES.

Take a pound of mutton-chops, freed from the fat, put them into a pan with three pints of water and boil them slowly, and simmer them for two hours. Take three moderate-sized carrots and the same number of turnips, peel and cut them into slices; boil them for half an hour in a quart of water; then throw them upon a cullender to drain off the water; and, having boiled two onions, sliced, in a pint of water, and also poured off the water, add the turnips, the carrots, and the onions to the mutton liquor, after removing the mutton-chops. Season with salt and a little celery-seed. Simmer slowly for four hours, then put in the chops again, and continue the simmering for another hour. The chops may be dished up with the broth.

This is a palatable, and nutritive dish for convalescents; and, owing to the long and slow simmering, the mutton is rendered soluble and of easy digestion.

TRIPE.

Few things are more easily digested than tripe, when it is properly cooked. After partially boiling it in the usual manner, and also after boiling some onions in two waters, both should be slowly boiled together, until the tripe is very soft and tender. A sufficient quantity of salt, and a pinch or a few grains of Cayenne pepper, may be added.

SWEETBREADS.

These, when plainly cooked, are well adapted for the convalescent. They should be slowly boiled, and very moderately seasoned with salt and Cayenne pepper.

FOWL, WITH RICE.

Free a young fowl from the skin and the fat between the muscles

on the surface of the body, and simmer it in good beef-tea, till it is very tender; season with salt only; and having boiled some rice as if for currie, add it to the liquor before the fowl is dished.

PREPARATIONS OF FISH.

WATER-SOUCHY.

Take two small fresh flounders, boil them in a quart of water to one-third, or long enough to reduce the fish to a pulp. Strain the liquor through a sieve, and, having cut the fins off four other small flounders, put them into the above-mentioned liquor, with a sufficient quantity of salt, a few grains of Cayenne pepper, and a small quantity of chopped parsley; and boil just long enough to render the fish proper to be eaten. The fish and the sauce should be eaten together.

If flounders are not in season, soles, or whittings, or small haddock, may be prepared in the same manner.

Few dishes are so much relished as this by convalescents from fever. Invalids sometimes ask for it daily for ten or more days. It is sufficiently nutritive, and very easily digested.

In advanced convalescence, the yolk of one or two eggs may be beaten up with a little soft water, and added to the strained liquor before the fish is put into it.

BROILED WHITINGS.

Broil the whittings without freeing them from the skin; and when they are sufficiently done, take out the back bone, and introduce a little cold butter in its place.

By cooking whittings in this manner, the juices of the fish are retained, and its nutritive property augmented. The fish thus cooked is of easy digestion, and well adapted for convalescents.

PREPARATION OF BEVERAGES.

AROMATIC BARLEY WINE.

Take a quart of barley-water, and boil it down one-third; then add to it, while it is hot, a pint of Sherry wine, a drachm of tincture of cinnamon, and an ounce of refined sugar.

A wine-glassful, two or three times a day, is a good cordial in convalescence attended with much debility.

MULLED WINE.

Take a quarter of an ounce of bruised cinnamon, half a nutmeg grated, and ten bruised cloves; infuse them in half a pint of boiling water for an hour, strain and add half an ounce of lump sugar; and pour the whole into a pint of hot port or sherry wine.

This is a useful cordial in the low stage of typhus fever, and in the debility of convalescence from fevers.

COOKING FOR THE NURSERY.

ARROWROOT.*

1 cup of boiling water.

1 " fresh milk.

2 teaspoonfuls best Bermuda arrowroot, wet with cold water.

1 *small* pinch of salt.

2 even teaspoonfuls white sugar, dissolved in the milk.

Stir the arrowroot paste into the salted boiling water; stir and boil five minutes or until it is clear; add the sweetened milk, and boil ten minutes, slowly, still stirring.

If the child has fever, or cannot digest milk, substitute hot water for it. It is, however, a dangerous experiment to forbid milk altogether for an infant. Rather diminish the quantity, putting in, say, one-third or one-fourth as much as the receipt names, and filling up with boiling water.

BARLEY.

It sometimes happens that milk disagrees with a delicate infant so seriously that it is necessary to substitute some other article of diet for a few days.

2 cups *boiling* water.

2 tablespoonfuls pearl barley—picked over and washed.

A pinch of salt.

2 teaspoonfuls white sugar—*not* heaping.

Soak the barley half an hour in a very little lukewarm water, and stir, without draining, into the boiling water, salted very slightly. Simmer one hour, stirring often, and strain before sweetening.

* From "Common Sense in the Household," by Marion Harland.

FARINA.

1 cup *boiling* water.

1 “ fresh milk.

1 large tablespoonful Hecker's Farina, wet up with cold water.

2 teaspoonfuls white sugar.

A pinch of salt.

Stir the farina into the boiling water (*slightly* salted) in the farina kettle (*i. e.*, one boiler set within another, the latter filled with hot water). Boil fifteen minutes, stirring constantly until it is well thickened. Then add the milk, stirring it in gradually, and boil fifteen minutes longer. Sweeten, and give to the child so soon as it is cool enough. If desired, make enough in the morning to last all day; warming it up with a little hot milk as you want it. Keep in a cold place. Some of the finest children I have ever seen were reared upon this diet. Do not get it too sweet, and cook it well. Be sure the farina is sweet and dry.

HOMINY AND MILK.

1 cup *small* hominy.

2 quarts of cold water.

Salt to taste.

Boil one hour, stirring often. While hot, mix some soft with new milk, sweeten to taste and feed to baby with a spoon.

This is also relaxing to the bowels, and should not be given if the child is disposed to summer complaint.

RICE JELLY.

$\frac{1}{2}$ cup whole rice, well-washed and soaked two hours in a little warm water; then added to the water in the kettle.

3 pints cold water.

1 small pinch of salt, put into the water.

Sweeten to taste with loaf-sugar.

Simmer the rice half an hour; then boil until it is a smooth paste, and the water is reduced one half. Strain through double tarlatan, sweeten, and give to the child.

This is an admirable preparation for an infant suffering with weakness of the bowels. If there is no fever, you may put one-third part milk, boiled with the rice. Give a few spoonfuls every hour or half hour.

WHEATEN GRITS.

4 tablespoonfuls grits (cracked wheat) soaked in a little cold water one hour, and then put into the kettle.

1 quart boiling water.

1 cup milk.

A pinch of salt.

Boil the soaked grits in the quart of water one hour, stirring up often; add the milk, and boil half an hour longer. Sweeten to taste, and if the child is well, pour cream over it. This is designed for children over a year old. It is slightly cathartic, especially if the milk be omitted, and is most useful in regulating the bowels. When this can be done without drugs, it is far better.

HOUSE DRAINAGE AND SEWERAGE.

*Country Houses.**—The sanitary defects of the average country-house are due to ignorance. Did the physician know, except in a vague and theoretical sort of way—that is, did he fully realize—the degree to which the ailments he contends against, and which he should be vigilant to prevent, are diseases due to removable causes connected with the construction and arrangement of the dwelling, he would insist upon a reform.

The action of poisoned water is less direct than that of a well-aimed rifle; and its effect, where there is any effect, is slower and less obviously connected with the cause than in a case of poisoning by arsenic. We can hardly hope to convince the common man of his error, and induce him to spend money, and to put himself to considerable personal inconvenience, to reform a state of affairs which has existed all his life-time, and which he believes to have answered well with him and with his fathers.

To his mind, typhoid fever, diphtheria, and the whole list of zymotic diseases, are afflictions sent by an inscrutable Providence, for some hidden purpose of discipline; and he believes it his duty to bear meekly, if sorrowfully, the chastening to which he is subjected. He is still far from accepting the idea that his discipline may have for its direct purpose his regeneration in this very matter of hygiene. In their unvarying operation the laws of health (which are not entirely inscrutable) strike both the just and the unjust, and these laws are disciplinary, or not, according as we meet their requirements with intelligent obedience, or bow blindly and ignorantly before them. Typhoid fever does not come to us as a punishment for Sabbath-breaking, nor for profane swearing, but as a punishment for the one sin which brings us within reach of its scourge—the sin of unwholesome living. Then, too, sinners though we are, in this regard, it touches us so slightly—only here and there a case—that we are led, not precisely to run the risk of chances which we appreciate, but to remain placidly unconscious

* Extracts from a paper read before the American Public Health Association, in Boston, by George E. Waring, Jr.

that the law is in operation about our own houses, awaiting only the due assembling of the conditions which bring its action to bear upon our own persons.

The precise methods of causation, and of propagation of cholera, diarrhoea, dysentery, typhoid fever, diphtheria, cerebro-spinal meningitis, neuralgia, and the minor range of malarial fevers, it is the province of the physiological investigator to determine. These questions are involved, if not in mystery, at least in a certain amount of uncertainty; and doctors disagree radically as to the "germ" theory, and as to the manner in which epidemics are introduced into new localities.

The well, although perhaps not very near the leaching cesspool, and the now foul soil surrounding it, may get its water through some stratum of gravel which carries the ooze of this cesspool; or it may penetrate a permeable stratum, or a seam in the underlying rock, which brings it into communication with other cesspools or privy-vaults far or near. These impurities are not perhaps enough to produce an obvious effect, while the water in the well is high, and holds back the water in the soil as the land-water in the beach holds back the salt tide; but, when the supply fails, in time of drought, then the demand on the well is replaced by a flowing-in from the foul earth, and the impurities are concentrated to a dangerous degree. Or perhaps the dejections of a patient ill with typhoid fever, or other disorder of the bowels, have entered the stream oozing from the cesspool to the well. In either case, disease may follow.

The importance of ventilating the soil-pipe having been recognized, a one and one-half inch lead pipe, leading from its highest point, has been carried out through the roof, closed over at the top to prevent the admission of obstructions, and perforated with a dozen little holes to give egress to the pent-up gases.

If any thing is certainly known with reference to the house-drainage question, it is, that in an unventilated system of pipes, the foul matters which they contain enter into a putrefactive decomposition which produces poisonous, or at least injurious, gases; and, if any thing is clear to the common comprehension, it should be that pipes of a corrosible material—like lead—made by human hands and subject to the defects of all human work, containing, day and night, corrosive and injurious gases of this character, are dangerous inmates of any inhabited house.

Poisonous sewer-gas is a product of the obstructed decomposition of organic matter in the absence of light and of a sufficient supply of oxygen. In its most dangerous form it is believed to have but little odor.

If the decomposition takes place with exposure to a sufficient supply of common air to furnish the oxygen needed for a more complete decomposition, the gases produced, although often more offensive in their odor, are not only less dangerous to health, but the more thorough decomposition is believed to be accompanied by a destruction of the germs of disease.

I believe it to be susceptible of proof, that of all the causes of the various zymotic diseases which occur in our otherwise well-appointed houses, by far the greater majority have received their filth-born impulse from poisonous gases escaping through the overflow and waste-pipes of wash-bowls, bath-tubs, etc.

The kitchen sink makes no slight demand upon our consideration. Its outlet offers a passage not, it is true, for fecal matter, but for every sort of organic substance from which fecal matter is derived; and which may supply, on its decomposition, precisely the gases which are generated in the ordinary soil-pipe. It does not carry the germs of disease—assuming that there are germs; but its scraps of food, etc., are, on the other hand, mixed with congealed grease, which covers them to a certain degree against the access of oxygen, and tends to make their decomposition especially foul. Add to this the serious difficulty, that the congealing of the grease has a tendency to obstruct the waste-pipe, and lead to leakage, and subterranean overflow of a serious character.

The methods for remedying these disadvantages are well known, and may be easily applied. The leading safeguard in the whole matter, here as elsewhere, is to be sought in the free ventilation of the waste-pipe at a point as near as possible to its source, and in the introduction of an efficient water-seal and grease-trap.

I am frequently asked whether the earth-closet does not offer a solution of the house-drainage question. Having been for years its enthusiastic advocate, and realizing as well as any one can its great value in the hands of those who will give it a little intelligent care—having no other system, and desiring no other, for my own house—I am still compelled to say that, in the case of the ordinary householder, the water-closet is to be preferred.

*City Houses.**—The country house gets from its isolated position, a full bath of sunlight, and a free circulation of pure air, which counterbalance many of its customary defects. But in spite of this, its defects are often pronounced; and deleterious influences arising from soil exhalations and from improper disposal of wastes are in its case often very serious.

* A paper read before the Public Health Association of New York. By Geo. E. Waring, Jr.

The extent to which the unwholesome influence of the ground air and moisture from the soil is felt by the occupants of town houses varies, of course, very much according to the original character of the ground.

We know very well, from a difference in salubrity between houses standing on proper sites and houses standing on improper sites, that this influence of soil emanations is serious; probably, so far as the usual slighter malarial ailments are concerned, this soil influence is the most serious with which we have to contend. At the same time the debilitating effect of the exhalations referred to—headache, neuralgia, loss of appetite, intermittent fever, etc.—take a far lighter hold upon the popular imagination than do the often fatal diseases which are produced by bad air of another sort. The low condition and consequent susceptibility to infection which the malaria of damp soil produces doubtless aggravate very seriously the dangers arising from the other source; that is to say, persons enfeebled by exposure to malaria would often succumb to infection, when a robust and vigorous person would withstand it.

Whatever our seed, our crop depends greatly upon the soil in which it is planted. In the case of a vigorous, active person, of strong constitution, and living under wholesome conditions, it may fall on sterile ground and be lost; while the same seed, sown in the blood of the weakly, may produce its fatal crop with certainty and abundance.

The causes of grave infection are precisely the same in the city that they are in the country, and they grow in both cases from improper protection against the emanations from the organic filth which is a necessary product of all human life. In the country it is perhaps less often by the fouling of the air than by the fouling of the water that these diseases are spread. In the city, the water supply coming from an untainted source, the infection is almost invariably through the medium of the air which we breathe.

We are very far from possessing such accurate knowledge of the conditions of decomposition which favor the multiplication of the germs of disease, or the production of such a condition of the air as produces disease, that it can be demonstrated with scientific certainty that under such and such conditions typhoid fever will be produced, and under such other its production will be impossible. It is a case where we have to accept purely circumstantial evidence.

No analysis of the water-closet drainage which oozed into the Broad Street pump in London, demonstrates to us that germs of cholera were communicated to its reservoir; but it *is* known that a water-closet whose outflow reached that well was used by a cholera

patient, and that within a week, more than five hundred persons, scattered over one of the best parts of London, and even as far as Richmond Hill, whither they had fled to escape the plague, but whence they sent to this pump for water, were killed by cholera; the only possible communicating link between the individuals of this scattered multitude being that they drank this water.

Human ingenuity has been able as yet to devise no system for the disposal of all manner of liquid waste which is at once so inoffensive, so invisible, and so healthful, as a well-arranged system of water-carriage removal. The unfortunate thing about it all is that it is easy to meet the requirements of the fastidious by such a development of the system as is, from a sanitary point of view, the worst possible. Marble-top wash-stands with silver-plated fittings, decorated china closet-bowls, planished copper baths set in cabinet work of hard wood, stationary trays in the laundry, and the brightest and handsomest workmanship wherever the plumbing is visible throughout the house, are too often—indeed it is hardly extravagant to say almost universally—the outward manifestation of most pestilential hidden dangers.

The experiments of Dr. Fergus, of Glasgow, have demonstrated in the clearest way the great susceptibility of lead to the corroding influences of the foul gases arising from organic decomposition. He cites a great number of instances in which, even after a few months' use, the action of these gases upon the material of the soil-pipe has perforated it through and through, and in some cases completely honeycombed a considerable area of its wall. This effect is produced by gases, and not by the foul water, as is proven by the fact that the perforations are always at the upper side of the pipe, and never on its lower side, where the water flows.

In modern practice it is almost universal to use for the soil-pipe and the larger branch-wastes, cast iron in the place of lead. This material is not susceptible to perforation from the action of its contained gases; but, as drainage works are constructed, it is often fed by numerous waste-pipes of lead, which come to it from bath-tubs, wash-basins, butlers' sinks, laundry trays, and urinals, and even the water-closet usually has a trap or a connection pipe of lead. All of these leaden connections are subject to the same liability to corrosion as is the lead soil-pipe itself; and in one sense they aggravate the danger, from the fact that perforations occurring in them are more likely to discharge gas into sleeping-rooms or into the more frequented parts of the house.

It has for some time been usual in all complete plumbing-work to relieve the soil-pipe by carrying a small "stench-pipe" from its

upper part, out through the roof of the house. This is generally a pipe not more than $1\frac{1}{2}$ or 2 inches in diameter; and in order to protect it against the admission of rubbish from above, it is either domed over, and perforated with a number of small holes, or its upper end is bent so that its outlet shall be turned downward. Unfortunately, it is rarely practicable, as our houses are arranged, to give water-closets an open outer window; but they surely require some more efficient means of ventilation than a small hole in the wall leading into a small flue choked with rough lumps of intruding mortar. The ventilation of these apartments would be materially improved by the use of shafts of six-inch earthenware pipes smoothly jointed, discharging well above the roof, and protected by an elevated cap against the entrance of rain-water.

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INFLUENCE OF THE OCCUPATIONS ON HEALTH AND LONGEVITY.

The subject is one that presents inherent difficulties in the investigation, although it is of vast importance and of peculiar interest. It involves questions that cannot be solved by theory alone, but which demand the largest possible amount of statistical information. Unfortunately, however, until of late years, very little effort has been made by statisticians to prepare tables of the relative mortality in different occupations.

But these, such as they are, gathered at different periods by candid and painstaking men, are of very great value.

It is obvious that health and longevity must depend very materially on the occupation. In civilized lands we all lead lives more or less artificial, shaping or narrowing our activities according to the varying demands of advancing society. "Lead a natural life" is a convenient form of rhetorical advice, but practically it can mean nothing more than to make the wisest selection of the benefits of civilization.

An ideal occupation, consisting in every way with the healthiest and most enduring development of all the faculties, would require four conditions:

1. It would admit of the harmonious development of the whole nation.
2. It would be congenial to the taste.
3. It would admit of system.
4. Its pursuits would be calm and unworried.

Now, it is evident that, taking the world as we find it, such an ideal occupation cannot exist; in no pursuit that men follow for

maintenance, or even for dignity merely, is it possible to conform, any more than approximately, to the ideal laws of hygiene.

Such being the case, we are compelled to form our estimate of the comparative healthfulness of different occupations by the results of observation and statistics. Assuming that all the pursuits in which we are engaged are more or less removed from the ideal supposed, we ascertain by theory and calculation which are, on the whole, the most favorable to health and longevity.

Dr. Jarvis has prepared the following tabular statement of the average longevity in some leading occupations in Massachusetts, New York, and Rhode Island:

Occupations.	Deaths.	Average Longevity
Clergymen	389	55.36
Lawyers	276	54.26
Physicians	540	54.32
Coopers	338	57.04
Blacksmiths	822	51.51
Carpenters	2,052	49.72
Masons	492	48.29
Tanners	230	47.90
Merchants and clerks.....	2,386	47.46
Cabinet-makers	253	46.34
Shoemakers	3,233	43.03
Painters	500	43.37
Tailors	486	41.08

The Register of the city of Boston has the following table of ages of seven hundred and six men, in the principal professions and trades, who died in 1855:

	Av. age.		Av. age.
305 Laborers.....	40.30	45 Clerks.....	32.98
69 Mariners.....	38.59	20 Shoemakers....	24.35
35 Tailors.....	39.08	15 Teamsters.....	34.40
32 Merchants.....	58.81	12 Gentlemen.....	59.83
32 Traders.....	49.68	11 Printers.....	39.45
33 Carpenters.....	45.76	10 Masons.....	40.20
22 Painters.....	40.36	9 Machinists.....	33.77
8 Farmers.....	57.12	8 Bakers.....	38.62
6 Ship-carpenters....	51.16	7 Blacksmiths....	35.00
5 Physicians.....	48.80	4 Curriers.....	28.50
5 Clergymen.....	53.80	4 Engineers.....	45.75
4 Coopers.....	40.50	5 Lawyers.....	60.20

In the twenty-second registration report of Massachusetts for 1866, I find a very carefully prepared table, showing the number and average ages of all persons over twenty years of age, whose occupations were specified, and whose deaths were registered during a period of twenty years and eight months, from May 1st, 1843, to December 31st, 1866. As the number of persons whose occupations and average ages are there given is upward of 95,000, this record is the most important contribution to vital statistics that has ever been made. I append the statistics of the most important representative employments. (See *Statistical Tables*.)

In the eleventh registration report of Rhode Island for 1863, the average ages of those who died during that year in that State are given, with their respective occupations, the ages under twenty being excluded.

As the whole number specified is less than eight hundred, the results are not very conclusive; in some of the trades only one or two cases of death are recorded. I select those that are of the greatest importance in a statistical point of view, omitting all such as do not present a sufficient number of deaths to be of value:—

Occupations.	No. of Per- sons.	Av. Age.
1. Agriculturists.....	147	65.22
2. Mechanics and artisans :		
Blacksmiths.....	13	60.84
Carpenters.....	24	57.37
Jewellers.....	12	39.41
Machinists.....	14	57.85
Shoemakers.....	12	53.91
Weavers.....	10	49.60
3. Laborers :		
Laborers.....	141	48.56
4. Business men :		
Manufacturers.....	10	47.80
Merchants.....	39	54.33
5. Seafaring men :		
Mariners.....	16	38.81

All statistics of this kind must be received with caution. The sources of error are numerous. Among the laboring classes change of occupation is the rule; some change several times during life; only a minority die in the occupation in which they begin life. This rule holds, however, that brain-workers are brain-workers in some occupation all their lives.

Let us now compare the reports of the English Registrar-Gen-

eral with that of Massachusetts and Rhode Island. The first registration report of England was published in 1838, since which time there has been continued progress in the system of arrangement and collation.

Dr. Caspar, of Berlin, and Dr. Guy, of London, both wrote on the subject of the relation of occupation to health and longevity; but, inasmuch as very few statistics had at that time been gathered, their speculations are of no great value. Ramazzini and Thackeray gave some advice to artisans by which they might in a measure counteract the evil effects of their callings.

But by far the best work on this subject that has yet appeared on either side of the Atlantic is a small book written by Dr. Thackrah, an eminent surgeon of Leeds, and published in 1832. Although he had few figures to aid him, his book is of great value, both for the compass and accuracy of its general observations, and for the originality and clearness of its ideas.

In 1857, Dr. Neison published a large work on vital statistics, the main object of which was to present the mortuary facts of the friendly societies of England, and also of the medical profession.

Dr. Farr, Registrar-General of England, in his fourteenth annual report, made some important statements in regard to the ages of men dying in different employments. From a careful examination of his tables, I am convinced that they are in the main corroborative of the experience of the registrars of Massachusetts and Rhode Island.

Of those that died in England in 1851, the different classes stand thus in order of mortality:—

- | | | |
|----------------|-----------------|-----------------|
| 1. Farmers. | 5. Blacksmiths. | 9. Miners. |
| 2. Shoemakers. | 6. Carpenters. | 10. Bakers. |
| 3. Weavers. | 7. Sailors. | 11. Butchers. |
| 4. Grocers. | 8. Laborers. | 12. Innkeepers. |

It thus appears that miners, bakers, butchers, and innkeepers experienced the heaviest mortality. In regard to the professions he states that the percentage of death is less or at least not greater than that of the average in all the employments, as we have seen to be the case in this country.

In Dr. Neison's report I find the following table, showing the expectation of life of the clerks, plumbers, bakers, and miners of the friendly societies of England:—

Ages.	Clerks.	Plumbers.	Bakers.	Miners.
20	31.83	36.50	40.02	40.67
30	27.57	30.50	32.35	33.15
40	21.83	24.30	24.07	24.42

Such, then, are the leading statistical tables that we have been able to obtain from the English and American reports. Although a system of registration was inaugurated in Geneva in 1549, and in Sweden in 1751, yet no elaborate, statistical comparison of the relative longevity in the different occupations has been made in any European country except Great Britain.

But from the fact, already noted, that the results of the observations on this subject in England and America agree in the main particulars, and from the fact that the expectation of life is about the same in Sweden, France, England and America, we are warranted, I think, in concluding that, were the same attention given to the comparison of the longevity in the different employments in these countries, we should find that the same general principles hold good in all.

Let us now inquire what general principles in regard to the relative healthfulness of different employments may be deduced from vital statistics.

First of all, we observe the pre-eminent healthfulness of what may be called the intellectual occupations.

According to the table, the average age of all classes of occupations was a little *over fifty years*. The relative longevity of those engaged in the different classes of occupations are in the following order, beginning with the highest :

1. Cultivators of the earth (managers of estates, farmers).	64.40
2. <i>Clergymen, lawyers, physicians, and professors</i>	56.48
3. Active mechanics abroad.....	51.04
4. <i>Professional men of all classes</i> (including musicians, editors, architects, etc.).....	50.35
5. Merchants, financiers, capitalists.....	48.26
6. Active mechanics in shops.....	47.93
7. Laborers—no special trades.....	46.49
8. Employed on the ocean.....	45.38
9. Inactive mechanics in shops.....	42.89
10. Factors laboring abroad (butchers, pedlers, drovers, teamsters, etc.).....	34.71

These statistics are exceedingly suggestive and thoroughly convincing. Observe that of these ten classes—which are here arranged in the order of their longevity—the first five may properly be regarded as brain-workers, while the last five—the lowest on the scale of longevity—includes those who depend chiefly on their muscles. Observe that laborers with no special trades, and consequently with

no special responsibility, come four years short of the average longevity; while cultivators of the earth, who own and control farms, exceed it by fourteen years. This distinction between responsible and irresponsible labor is one of vital importance.

Observe also the fact, of such great interest to collegiate students, that clergymen, lawyers, and physicians exceed the average longevity by six years, having a greater expectation of life than any of the ten classes, except cultivators of the earth. Comparing the four professions with each other, I find from all the statistics I can gather from this country and Europe, that the average expectation of life for

Clergymen is.....	60 years.
Lawyers is.....	57 “
Physicians and Professors is.....	56 “

In view of what has been previously advanced on the relation of the intellect—including, of course, the entire emotional and religious nature—to the brain, we can easily understand why clergymen live longer than any other class, except farmers.

The ministerial calling, when rightly pursued, approximates more nearly than perhaps any other to an ideal occupation. The pastor is called upon to use his whole nature, the emotional and physical as well as the distinctively intellectual. The exercise of the moral faculties is specially conducive to a healthful manhood. No exercise in the world is so healthful as public speaking.

On comparing the different tables it will be seen that they all agree in allowing the greatest expectation of life to those professions and occupations that call for the severest exercise of the mind. This is a vitally important fact, for it strikes at the root of popular and professional impression. It has always been supposed that those who depend on the labor of the mind must expect to sacrifice health to a greater or less degree, as well as the prospects for a green old age; that the immortal part of our nature could be exercised only at the expense of the mortal. But if the facts I have collected are of any value, if general observation is of any value, then the reverse is the truth, and we can but wonder that for so many scientific, progressive years the belief has prevailed, both in the profession and out of it, that activity of the mind is unfavorable to health and longevity.

Even Dr. Thackrah, original and untrammelled as he was, inclined towards the prevailing belief on the deleterious effects of mental toil; but not he, nor Caspar, nor Gny, were furnished with statistics of value, and only gave the inferences of false theories and pre-

judiced observation. The doctrine that has for years been taught by the profession and believed by the people is, that in the economy of man mind and body are necessarily at war; that they can prosper and grow only as the nations of Europe can extend their dominions—by infringing on the rights of each other. This doctrine is worse than unscientific; it is a libel on the Creator, who has ordained that body and soul should work together, and be developed in grand and beautiful harmony. God makes nothing in vain, and if a mind of wondrous power is given to man, it is designed that it should be used, and it is also provided that it should be strengthened and not weakened by its own activity; and furthermore, that the body should be benefited and not injured by the growth of the soul it incases. The law is this: *mental activity is healthful; mental anxiety is injurious.*

Let us now look at the special occupations that call for the largest exercise of the intellectual nature.

Clergymen very properly demand our first attention. They are in many respects the most prominent of our professional men. In this country they have always taken the initiative in the cause of education and social progress. Moreover, they have always been cited as illustrations of the destructive effects of mental toil, and in the popular mind the ministry has ever been associated with bronchitis, consumption, insanity, and an early grave. Now while it is true that clergymen, in common with all classes of brain-workers, are peculiarly subject to the class of diseases that result from undue activity of the nervous system and vocal organs, it is also true that they are remarkably free from most of the inflammatory affections that carry away our mechanics and laborers before the average term of life is reached. Let it be remembered that the nervous diseases peculiar to literary men, of which so much is said and written, although they annoy existence and cripple usefulness, are by no means as serious in their character as many acute disorders that over-exertion of the physical powers with attendant exposure seem to invite and foster.

The ministerial calling approximates more nearly than almost any other to the ideal occupation we have supposed. The pastor is called upon to use his whole nature. The exercise of the moral faculties of reverence, hope, spirituality, and benevolence is specially conducive to health and longevity—a fact which appears to have been almost wholly ignored by writers on hygiene.

Again the pastor can, if he will, perform his work in calmness and repose. His life is usually free from the unequal pressures, the agitating storms and crises that at times embitter the existence of

speculators and politicians ; if he labor in any other than an equal frame, the fault is usually due to himself more than to externals

Lastly, no one better than the pastor can systematize his time, giving to each day, and each portion of the day, its appropriate work or recreation.

The facts of clerical biography sustain the theories here advanced. Concerning no other occupation are the figures so accordant.

The average longevity of clergymen of all denominations, according to the Registration report of Massachusetts, is 57.79 ; and 53.80 according to that of Boston alone. In Rhode Island it is 59.25.

Of 417 clergymen whose names are recorded in Allen's Biographical Dictionary, the average age was 65.7 ; and of these there died :*

13	between	90	and	100 years.
66	"	80	"	90 "
123	"	70	"	80 "
84	"	60	"	70 "
53	"	50	"	60 "
43	"	40	"	50 "
25	"	30	"	40 "
5	"	20	"	30 "

Dr. Lombard, of Geneva, found the average age of 53 Protestant clergymen to be 63.8, excluding those who died under thirty.

Of 888 clergymen who died in Massachusetts, and whose ages were known,

90 averaged	61.77
124 "	65.00
302 "	62.00
372 "	64.00 †

Of 840 clerical graduates of Harvard College, the average age was 63.62 ; 41 in each 100 reached 70. Of those dying between 1835 and 1841, the average age was 56.‡

Dr. Madden, in a work on the infirmities of genius, while arguing that the professions in which the imagination was largely exercised were relatively unfavorable to longevity, allows clergymen 70 years.

* Prize Essay of Benj. W. McCready, M.D., Transactions New York State Medical Society.

† Report of Sanitary Commission of Mass., 1850.

‡ Quarterly Register, vol. x., p. 39.

If, then, there be any truth in statistics, as well as any logic in our reasoning, the prospects of a long life for the minister are exceedingly flattering, in spite of the temptations to excessive work of the brain, and of their manifold bronchial and laryngeal disorders. Among no public bodies do we find more aged and venerable men than in the synods of clergymen.

Lawyers.—Of *lawyers* it has been said, that they need a “bad heart and a good digestion.” If this be true, then our pleaders and counsellors are certainly supplied with these conditions, for they stand very high on the tables of longevity. The law is indeed very far from being a natural or ideal profession. The advocate must spend hours and days in the horrible air of court-rooms; the counsellor leads the most sedentary of all lives in his office chair.

On the other hand, law presents a field for the exercise of the largest powers of reason and judgment; as a science, it is pre-eminently intellectual in its character, and is intimately interwoven with statesmanship and diplomacy.

Public pleaders speak long and earnestly, sometimes for days together, but they rarely complain of the clergymen’s sore throat or of anything analogous, for the simple reasons that their tones are more conversational; their briefs are merely used for reference; and, far more than clergymen, they harden the neck to the variations of the atmosphere by a wise and judicious neglect.

The average age of lawyers in Massachusetts is 56.21; in the city of Boston 60.20. It is clear that they do not stand as high as ministers in statistics any more than in theory. Judges live to be 66.38.

Physicians.—Medicine is, in some particulars, the most inconsistent and unequal of the professions. In one aspect it is peculiarly conducive to health, in another is theoretically most hazardous. It calls into action the best faculties of both mind and heart; its study embraces, in its totality, the whole range of human thought and feeling.

Moreover, the physician is not alone an operator in bodily injuries, and a prescriber for merely physical diseases; it is his solemn, responsible privilege to

“Minister to a mind diseased;
Pluck out from the memory a rooted sorrow;
Raze out the written troubles of the brain,”

—a task that demands his own moral as well as intellectual sympathy and inspiration. In so far, then, as medicine gives scope for the exertion of man’s best faculties of mind, in so far as it quickens and

intensifies the moral nature, in just so far does it approximate to the ideal type of a profession. But there is another side to the picture.

The physician, especially the country practitioner, cannot adjust his hours of labor according to hygienic principles. The life of a faithful, successful practitioner must, then, be one of exposure, anxiety, and irregular toil. The city physician is often able to combine in a most happy manner the physical exercise of daily practice with various study and acquisition; thus marrying, as it were, bodily exercise with a purpose, to the calm pursuit of science—a most fortunate union, that cannot fail to be conducive to vigorous health and length of years.

It is stated on very good authority, that physicians are more than ordinarily subject to cardiac disease, owing to the fact that they are so continually obliged to disguise their feelings and thoughts while in the presence of patients. Whatever of truth there may or may not be in the statement, it does not prevent their attaining a high average longevity.

Of 490 physicians of Massachusetts who died before 1840, the average age was 57, and 35 in each 100 attained to 70 years.*

In Thacher's Medical Biography (quoted by Dr. McCready) 145 physicians are mentioned, whose average age is 62.8. Of these:

3	died	between	90	and	100 years.
25	"	"	80	"	90 "
37	"	"	70	"	80 "
30	"	"	60	"	70 "
21	"	"	50	"	60 "
18	"	"	40	"	50 "
15	"	"	30	"	40 "
12	"	"	20	"	30 "

It thus appears that 59 of these lived to be over 70, and 100, or more than two-thirds, over fifty.

Of 32 physicians and surgeons whose lives are sketched in Gross' Medical Biography (including several who died before their prime), the average age was 59.

The *farmers* of intelligent districts are properly included in the class of brain-workers. A gulf as wide as the Atlantic separates the husbandman, ruling "*sua arva paterna*," and the common laborer on the farm, hired at so much a week. A stupid or shallow-brained man, devoid of energy or foresight, can no more make a successful farmer than he can make a successful lawyer, merchant, pastor, or physician.

It is a fact generally known that the average longevity among

* Report of Sanitary Commission of Massachusetts, 1850.

farmers in this country is greater than that in any other occupation. But their green old age is not due to their muscular exercise alone, for mechanics and laborers, who work even harder than the majority of farmers, do not live as long by many years; it is not due to the pure air they breathe, for many outdoor workers are much lower in the scale of longevity than they; nor, lastly, is it due to the calmness of rural life, for the farmer is burdened with grave responsibilities and oppressed often by weightier cares than the workman he hires by the day or month, the butcher in the market, or the teamster on the highway, all of whom die much younger than he.

Farmers are long-lived not only because of pure air, moderate exercise, and country quiet, but more especially because they can counteract the animalizing effects of merely physical labor by varied activity of the mind.

In Massachusetts the average age of 22,764 cultivators of the earth was 64.40.

Merchants, manufacturers, and men of business next demand our attention. That the head of any business firm must be a man of intellectual activity and resource, there can be no room for question. Mercantile life, with its myriad complications and crises, makes heavy drafts on the wits and genius of the ablest. And yet the pursuits of commerce, manufactures, and trade do not usually develop the best faculties of man in their entirety; they may be successfully prosecuted without the aid of the moral nature, or the highest capabilities of the mind. The frequent but by no means necessary tendency of commercial life is to sordidness, externalities, and morbid worship of property as the end rather than the means of existence. So far, then, as business life of any kind begets narrowness and greed of gain, just so far is it unfavorable to health. The merchant who is master of his affairs can be measurably systematic in his labor. Moreover, the pursuits of trade will always be congenial to human nature, until the worship of Mammon is less universal than now; and the man of business cannot fail to be inspired by the hope of the bright rewards of his occupation, though at times he may be sickened with its cares and uncertainties. But he is the victim first prostrated by the financial storms which at irregular periods sweep over the land, paralyzing, for the time, the mighty arm of trade. We find business disasters are very frequently the exciting causes of insanity.

But in spite of all drawbacks attendant on business life, merchants are usually healthy, and their average longevity, though below the standard of clergymen, lawyers, or physicians, is greater than that of artisans and laborers.

In the table of Dr. Jarvis, their average age is 48.39; in the report of Massachusetts, covering twenty-three and more years, it is 47.95; in Rhode Island it is 54.33, while manufacturers are put down at 47.80; in Boston, 58.81. The average of all (merchants, financiers, and capitalists) is 48.26.

Other causes besides brain labor have made moderns more healthy than the ancients. Sanitary laws are now better understood and obeyed. Says Dr. Jarvis in a recent essay, speaking of Europe a few centuries ago:

“Even in the midst of this wide waste of death, the people took no pains to search out the causes of these pestilences; they only thought of contagion, and of endeavoring to prevent the spread of the disease from the persons and houses afflicted to those that were yet free from it. And though there were abundant sources of pestilence in their midst; though there were stagnant moats and pools; though there was no underground drainage, but superficial gutters filled with all sorts of filth, decaying animal and vegetable matters, and so choked that the water could not run off; though their houses were unswept and their inhabitants wore their clothing unwashed; though the air within and without was reeking with pestilential exhalations—yet the people and the rulers took no note of these things.”

Artists and Musicians, as a class, only cultivate the peculiar gifts they enjoy, ignoring oftentimes the higher intellectual and moral endowments. Whatever in art or music is ennobling, enlarging to mind and soul, serving to make man more intellectual, more spiritual, and more catholic in feeling, must be conducive to health and longevity; but the great body of musicians in this country, at least, are simply men of special aptitudes, and are oftentimes very irregular and dissipated in their lives. The average age of 101 artists in Massachusetts was 45.19. As a class they are unbalanced men, for the reasons just stated, and, if the statistics of insane asylums are worthy of credence, artists furnish a greater percentage of inmates in proportion to the numbers in the profession than almost any other class.

Students in academies and colleges are as healthy and vigorous as any other body of young men of similar ages in the country.

In spite of the late hours, and oftentimes irregular habits of students; in spite of their excessive use of tobacco, and spasmodic industry, they are, as a rule, both in this country and in Europe, eminently vigorous and healthful. Neither among clerks, mechanics, nor laborers have I seen so pleasant an average of sturdy, wiry, bounding health as among the undergraduates of Harvard and Yale.

Students are popularly supposed to shorten their lives by application to books. Whenever a student dies during his educational course, the fact is noised abroad as another evidence of the pernicious effects of labor of the brain. There is no question that some students do occasionally injure themselves by excessive or disproportionate toil, and there have been possibly a few deaths from this cause; but such instances are very rare. It cannot be too often repeated that study is healthful, and conduces to longevity. Students sometimes injure themselves by excessive and useless anxiety about their standing in their classes, or distress themselves in their zeal to secure high prizes in scholarship. In such cases it is not so much the labor as the anxiety which kills.

Teachers of primary schools are not usually over-healthful nor very long-lived, but the occupation of teaching itself is not necessarily injurious. Of 74 professors mentioned in Allen's Biographical Dictionary, the average age was 61; of 22 in Massachusetts, 55.81; while of 359 teachers in the same State, the average age is but 39.95.

Why is this discrepancy? The answer is obvious. Teachers stand low on the list, partly because very few follow teaching as a life calling, but abandon it usually before arriving at maturity; and therefore of those who die and are registered as teachers, the average age can, of course, be no guide in determining the healthfulness of the occupation; partly because the duties of instruction in the elementary branches do not call forth the highest powers of intellect, like pleading and sermon-writing; and partly because they are confined for many hours each day in poisonous and over-heated rooms, subject all the while to multitudinous petty vexations and "insect cares," which, though they are mighty enough to torture the body and fret the spirit, are too insignificant to develop the highest type of character.

Authors, as a distinct registered class, are not numerous either in this country or in Europe, but they are scattered through all the professions. Whatever hygienic laws apply to professional men must also apply to authors, as such. It follows, therefore, from what has been said that authorship is favorable, and eminently so, to health and long life.

On the score of congeniality, we may safely assert that no class so love their calling as do authors. Says one: "Of all artists, the poet is most fond of his work;" and the statement may be extended to embrace all classes of writers.

Unless driven by pecuniary straits, authors can regulate their hours of labor according to hygienic laws. They can systematize their time; they can think in repose. But authors are usually men

of genius endowed with exalted imaginations, and subject to varying moods and fitful humors. The muse is often coquettish, and will not come and go by clock-work; fancy will not soar by the laws of arithmetic. It is one of the compensations of genius, that he who possesses it largely must be its slave. The imagination of great souls breaks from the fetters of hygiene, and they cannot restrain it if they will.

It is useless for such geniuses to attempt to regulate their seasons of creating by the chronometer, like the compiler or statistician.

So much has been said of Kirke White, Chatterton, Keats, and others who were similarly unfortunate, and so many homilies have been written on the lessons of their lives, that those who have not investigated the subject will be surprised at the statement that the average age of the poets, essayists, historians, and novelists of England, whose names have been handed down with various degrees of fame, is nearly *sixty years*. If we go back to classic times, we find that Cicero died at sixty-four; Demosthenes at sixty; Socrates at ninety; Virgil at fifty-one; Tacitus at sixty; Plato at eighty; Aristotle at sixty-three; Æschylus at sixty-nine; Ovid at sixty; Livy at seventy-six; Anaxagoras at eighty-eight; Zeno at ninety-nine, and Xenophon at ninety; and if the list be extended to include all the immortal authors of antiquity, the average longevity is still found to be very high. Comparing the different spheres of intellectual activity, we find that philosophers and men of science live longer than poets, or those who are endowed with rich gifts of fancy. Observe the following comparative list:

<i>Philosophers and Men of Science.</i>	<i>Poets and Romancers.</i>
Galileo..... 78	Virgil..... 52
Franklin..... 84	Dante..... 56
Herschel..... 84	Petrarch..... 70
Newton..... 85	Fenelon..... 63
Halley..... 86	Pope..... 56
Locke..... 73	Molière..... 53
Roger Bacon..... 78	Horace..... 57
Buffon..... 81	Racine..... 59
Harvey..... 81	Milton..... 66
Galen..... 79	Young..... 80
Jenner..... 75	Corneille..... 78
Haller..... 70	Voltaire..... 85
Galvani..... 61	Wieland..... 80
Francis Bacon..... 78	

The causes of this difference are sufficiently obvious. The life

of the philosopher is one of calmness, regularity, and unworried activity of mind; the life of the poet is often one of excitement and irregular and spasmodic industry, or of absolute dissipation; the average longevity of the one class is probably between 70 and 80 years.

That even these irregularities and excesses are not of themselves so destructive as is supposed, is proven by the records of literature. With the sad examples of Kirke White, Schiller, Chatterton, Byron, and Poe before our minds, we find that the average age of authors is very high. The average age of the writers of France, Germany, and America, of the past century, will not fall much below that of clergymen. *Journalists* in this country are not as healthy or as long-lived, on the average, as authors, and for very obvious reasons. Those, however, who work regularly and calmly, and obtain a proper amount of sleep, may and do live as long as other classes of literary men.

We seem, then, to be shut up to the conclusion that intellectual activity is not only healthful, but pre-eminently so, and that the effects of the mental excesses of professional men are far more than counteracted by the conserving tendencies of the exercise of the higher faculties.

A corroborative argument in favor of this position is to be found in the fact that *the expectation of human life increases with the progress of civilization*. Although this has been denied by some, there can be little room for doubt to the candid inquirer.

Registrations of births and deaths were kept by the Greeks and Romans.

Dr. Jarvis (quoting Mallet) thus speaks of the improved expectation of life in Geneva:

“The expectation of life in that city was:

“ In the 16th century.....	21.21	years.
“ 17th “	25.67	“
“ 18th “	33.62	“
1801 to 1833.....	39.69	“
1814 to 1833.....	40.68	“

That is, the whole sum of life granted to a thousand persons, from birth to death, at whatever age, was twenty-one thousand two hundred and two years in the sixteenth century, and forty thousand six hundred and eighty years in the nineteenth century; giving in the former an average of twenty-one years and one-fifth, and in the latter an average of forty years and two-thirds, and showing an increase of human life of nearly one hundred per cent. in those three hundred years. This improvement is due to science and the

mental and moral activity to which this progress is due. The rate of annual mortality in France in 1781, was one in 29 ; in 1802, one in 30 ; and in 1823, one in 40. In London in 1700 the annual mortality was one in 25 ; in 1781, one in 40.

If, then, there has been a gradual and continual increase in the expectation of life on both sides of the Atlantic, the inference is warranted that such increase is owing very materially to the expanding intellectuality of our modern civilization, as well as to a better knowledge and observance of the laws of health.

The second fact that we learn from the study of vital statistics is this: that *the greater the mental and moral endowments of a man, the greater the amount of intellectual labor he can undergo, and the better his prospects for longevity.* It would seem that those upon whom nature has been most prodigal of her intellectual gifts can work harder and longer, with better expectation of life (other things being equal), than the rank and file of humanity in any of the professions. Although this idea has not been advanced before, so far as I am aware, its truth is, I think, satisfactorily established by analogy and by literary and scientific biography.

Isolated illustrations of longevity among great men are familiar to us all. But we have no right to generalize from a few instances. In order to establish the general principle that the greatest geniuses and hardest brain-workers of the world attain an exceedingly high longevity, we need as many cases as can well be obtained.

I have therefore taken the pains to go through the Cyclopædia, and to note down the ages of *one hundred* of the greatest men of history—those who have created epochs, and have been the leaders of the world's thought in literature, art, science, and statesmanship—and I have found that the average age of these was much higher than that of literary and professional men generally ; nay, even much higher than that of clergymen, the longest livers of all. This list, which covers a period of many centuries, contains such names as Goethe, Coleridge, Lessing, Beranger, Wordsworth, Voltaire, Hume, Milton, Shakspeare, Dante, and Irving, among men of letters ; Raphael, Michael Angelo, and Reynolds, among painters ; Malebranche, Locke, Leibnitz, Hobbes, and Hamilton, among modern philosophers ; Socrates, Aristotle, Plato, and Cicero, among the ancients ; Harvey, Cuvier, Buffon, Galileo, Humboldt, Newton, Jenner, and Faraday, among men of science ; Napoleon, Marlborough, Washington, Metternich, Richelieu, Burke, Webster, Calhoun, and Clay, among warriors and statesmen ; and Calvin, Luther, Knox, Butler, Paley, and Edwards, among theologians. No one will deny that these, and similar names, fairly represent the giants of history.

Now, the aggregate ages of the one hundred men on this list was not far from 7,500, giving the astonishing average of nearly *seventy-five years*, which is twelve to fifteen years higher than that of the most favored of ordinary professional men.

Whoever will make the effort to fill out any list of names that thoroughly represent the leaders of the world's thought and activity will, I am sure, arrive at results not essentially different from mine.

In opposition to the facts here presented, it will be said that nervous diseases are on the increase among us, and that they are most frequent and most severe among brain-workers. That this impression is well founded there can be no question. Paralysis, neuralgia, hysteria, dyspepsia, hypochondriasis, and insanity are certainly more frequent, both in this country and in Europe, than they were thirty or fifty years ago. In my own practice, I am continually amazed by the variety and subtlety of phase that these diseases assume even in the young and growing generation. But it is one of the compensations of these nervous disorders that they are not rapidly fatal, and that they *protect* the system against febrile and inflammatory affections that hurry the Indian, the negro, and the poor laborers of our own race into early graves.

The third fact which we learn from these statistics is, that of those occupations which are not distinctively intellectual, those are most favorable to health and longevity which, on the whole, demand the greatest relative activity of the mind.

Those mechanics who, like carpenters, carriage-makers, blacksmiths, use their brains as well as their muscles, although they work much indoors, are healthier and longer-lived than shoemakers, tailors, jewellers, and operatives in factories, whose labor is so rigidly systematized that they are obliged to do very little more thinking than the machines on which they are employed.

It should be remembered, also, that a *variety* of muscular activity is more conducive to health than mere routine, that calls into play but a single set of muscles.

Active mechanics abroad live to be 51.04.

Brickmakers live to be 48.63. This is a very good average. Their occupation admits of a variety of toil, and much of the time they have the benefit of the sunlight.

Carpenters attain the age of 51.20. Their trade admits of a variety of toil. Some of the time they are outdoors, and then again they labor in shops. Most of the time they are exposed to the sunlight. All of the principal muscles are called into exercise at various times and in various combinations.

The carpenter, breathing no noxious gases and no poisonous dust, cramped in no narrow position and imprisoned in no heated rooms, is, on the whole, the healthiest of artisans.

There are to be found those among carpenters who are obliged at times to labor in unhealthy localities. There are some who work entirely in shops, breathing heated and impure air; but as a general rule, most of those who follow this calling are enabled, for a portion of the year at least, to labor in the open air. They are rarely, if ever, injured by dust. Their labor admits of great variety, and in some of its departments demands varied activity of mind. The master carpenter is really a brain-worker.

Calkers and ship-carpenters are also comparatively vigorous, and live a comfortable length of years. Calkers are obliged to labor in a confined position, and the mere exercise of their trade is not stimulating to the mind, nor calculated to develop the whole physical man. That their average longevity is good is due to the pure air they breathe, more than to any other cause.

Ship-carpenters and calkers spend all or nearly all of their time in the open air. Although boats and vessels are sometimes built under cover, still the protection afforded is not usually sufficient to keep out entirely pure air. I have had occasion at different times in my life to see many ship-carpenters. I have usually found them to be a healthy and vigorous class of men. The odor of tar is by some supposed to be beneficial to those affected with disorders of the lungs. If there be any truth in this popular belief, the ship-carpenters and calkers should certainly have the full benefit of it. There is no question that inhalations and injections of tar are beneficial in inflammations of the mucous membrane of the throat.

Coopers, carriage and clock makers, and wheelwrights are all quite healthful and have a good expectation of life, and for the same reasons that apply to the carpenters and joiners. The journeyman may become an architect, provided he be able and willing to climb the rounds of the ladder, one by one. It is impossible to estimate the benefit that results from proper encouragement to ambition. Thousands of the European peasantry are kept down in body and in mind by the force of uncontrollable circumstances. They are chronically poor. They have little chance to rise. They have consequently no stimulus to ambition—no motive to sustained, aspiring industry. In the United States, on the contrary, all mechanics have a chance to rise, provided they have the ability and the energy. The humblest and the poorest may become rich, intelligent, and influential. These considerations act as a stimulus to those mechanics who are not dead to all ambition, and

impel to active thought and strong exertion. In those callings where the chances of promotion are distant and cloudy, we shall see that men become desperate and animalized, while in the same proportion their life-expectation diminishes.

Grocers are said to be troubled with a kind of itch, caused by the irritation of sugar and other substances they handle. But although this affection is disagreeable, it is neither dangerous nor fatal. Their life is active, and allows of a wide range of intelligence and energy; while sluggish dotards may exist by the occupation, it yet affords scope for the highest business abilities. They die at 48.03 years.

Grocers have usually a wide variety of duties. They are not only to "tend store," wait on customers, consummate bargains, but also in many cases to ride much in the open air, to deliver goods at the houses of their customers. When their business grows to large proportions they become business men, and are to be classed as merchants. I need not say that by grocers is here meant those engaged in retail trade, and not wholesale dealers, who, of course, are always to be classed as merchants. Sometimes grocers are compelled to rise very early in the morning, in order to obtain their produce and bring it to market. On this account they sometimes are obliged to cut short their hours of sleep. I need not remind those who have read my essay on sleep, that I regard the common idea that we take too much sleep as erroneous. Among our brain-workers more take too little sleep than too much.

Blacksmiths live long, and are not subject to any peculiar disease. Of more than 1,000 in Massachusetts, the average age was 52.69. While their work is hard, it admits of not a little variety. They breathe good air and observe regular hours of labor. The cinders, smoke, and heat are injurious to the eyes, and give rise to chronic inflammations, but have no marked effect on the general health.

Millers do not seem to be injured by the dust of flour and meal they continually breathe, although Thackrah distinctly asserts that starch and farina manufacturers are more than ordinarily subject to bronchial and pulmonary disorders. Their occupation is in all other respects healthful and elevating, and they may not improperly be classed as manufacturers. The average age of 186 in Massachusetts was 58.58.

We now come to speak of those employments that are not regarded as favorable to health and longevity, which we find to be by far the largest class, including most of the trades and mechanic arts that attend upon and are a part of our modern civilization.

Butchers are proverbially fleshy, bloated, and red-faced. So

universally is this the case, that to "look like a butcher" is the everyday phrase applied to any one whose countenance indicates more of the animal than of the spiritual nature. To this rule, as to all rules, there are marked exceptions. I have seen butchers in carts and in markets, with their shrunken faces, who seem to gain no flesh or color, even after dealing in meat for years; yet those few are almost always healthful and strong.

The inquiries at once arise, What is the cause of this professional redness? Does it indicate unusual vitality?

Although our knowledge of vital chemistry is too imperfect to enable us to make a scientific demonstration of the theory, it is yet very clear, I think, that the butcher's face is due to the emanations of the stalls and slaughter-houses. We seem, indeed, to be driven to this explanation by exclusion. If exposure, if vigorous exercise, if intemperance, or all conjointly, can account for this color, then the sailors, laborers, and teamsters, who are even more exposed and active, and, as a rule, even more intemperate, ought to exhibit this peculiarity to a far greater degree.

I pronounce this opinion with caution, for I am aware that it is one of the most difficult things in the world to arrive at absolute truth in all matters of this nature. Our life is so complex, so many and diverse influences are ever and continually surrounding us, that it is almost impossible to tell in any given case just what cause has produced any definite result on the human constitution. As a rule, those who know the least are the most ready to give positive opinions. Thousands of years ago Confucius said: "What you know, to know that you know it, and what you do not know, to allow that you do not know it—that is knowledge." This maxim should be remembered by all. Our libraries are filled with erroneous statements on the various matters connected with health, that would never have been made if the authors had been willing to confess their ignorance.

To the next inquiry, whether the color and fat of the slaughter-house are healthful, very opposite responses are given from Massachusetts and from beyond the sea. Of 335 butchers in Massachusetts, the average age was 49.85; while in England they are next to the last of the twelve classes in order of healthfulness. Dr. Farr, in the report already quoted, states that the mortality among butchers was fearful; that the proportional percentage of deaths among them was greater than that among the miners, and only exceeded by that of inn-keepers and beer-shop tenders.

It seems hard to explain this discrepancy. Dr. Thackrah thought that the emanations of stalls and stables were peculiarly healthful,

if not medicinal in their character, and on that theory accounted for the vigor of butchers, groomsmen, and stable-keepers.

That these odors and emanations of dead and living animal matter are not *very deleterious* to health is proven by the strong frames and fair longevity of those who all their lives are subject to them.

Tanners and curriers are the most singular paradoxes among artisans. They breathe an atmosphere intensely offensive, even to nerves that are not sensitive; they labor in dampness and amid decaying animal substance, and yet their lives are not short, nor are they subject to any special form of disease. A stranger visiting a tan-yard for the first time is sickened and well-nigh suffocated by the horrible stench, while he sees burly gray-haired men handling and cleaning the hides, to all appearance drinking in health at every breath. Years ago it was observed in Europe that the vile odors of tan-yards were not injurious to the health of those employed in them, and very naturally the theory arose that they were, in fact, medicinal in their character, and particularly adapted for consumptives.

In the course of my life I have visited many tan-yards. I have seen, I think, the worst of them. In Eastern Massachusetts, where tanning is quite extensively carried on, I had opportunity, a few years ago, to visit a large number of yards. At first the odor was frightfully disagreeable. The wonder was that any human being could live in such places. The currying shops are particularly disagreeable. And yet I could not find that those who labored in those establishments were more afflicted with disease than other men. Neither am I able to say whether they were or were not exempt from disorders of the lungs. Popular impressions on these subjects are very apt to be erroneous. The question can only be settled by comparative statistics. Some philosopher has said, "Any one can state an opinion, but very few can collect and arrange important facts."

In the "Annales d'Hygiène" for 1862 is an essay by Dr. M. C. Beaugrand, from which I glean a brief history of the variations in medical sentiment on this important subject.

Ramazzini, in his "Advice to Artisans," published in 1797, distinctly asserts that tanners are very unhealthy; Civillo, of Naples, gave a contrary opinion in 1799. Ackermann, of Germany, in a work published in 1780, also was of the opinion that tanners and curriers were as strong and vigorous as any class of laborers. Patissier, of France, favored the views of Civillo and Ackermann, declaring with great positiveness, "la profession de tanneur plus désagréable que dangereuse."

Halfort, of Germany, and Dr. Thackrah, of England, agree in attributing to the atmosphere of tan-yards conservative if not medicinal virtues. It was at one time asserted that patients far gone in phthisis had been restored by laboring over skins and hides, breathing the disagreeable air of the yards, but from observations that have since been made it seems to be fully established that phthisis is as common among tanners as among laborers in any healthy occupation.

Of 160 cases of sickness in the hospital of Würzburg, cited by Schlegel, there were very many cases of tuberculosis. Statistics clearly show that pneumonia is both common and fatal among them, while they are far from being exempt from bronchitis and kindred affections.

Their average age in this country is about 46, which is certainly not very high, even for laborers whose occupation demands little exercise of the nobler faculties. The conclusion we must accept, then, is this, that the occupation of tanning and currying, as compared with other employments of a similar grade, has neither a positively deleterious nor salutary effect on health and longevity, but that it is, indeed, rather *negative* in its influence on those who become habituated to its disagreeable and stifling odors.

Teamsters, stablers, and drivers do not live to be much over 40. It is the common belief that the odors of barn-yards and stables are healthful, and there are those who, with failing health, seek relief by hiring themselves out as groomsmen. It cannot be denied that some are thereby benefited, just as some have been cured of consumption by the air of tanneries; but in both cases it is more than probable that the same kindly results would have followed the change to any active occupation.

Tallow-chandlers seem to belie the aspersion cast on their trade, by living longer than almost any other class of artisans, for of 48 in Massachusetts, the average longevity was 54.19. But inasmuch as many of these were not unlikely heads of, or partners in firms, with the responsibilities and cares of manufacturers, it is evident that more abundant statistics are necessary before we rush to the conclusion that soap and tallow establishments of modern times seem to prolong the lives of those employed in them.

Glass-blowers have a most unfortunate calling, which, although it demands a kind of skill and practice, is always seriously detrimental to the system. They are exposed to an unnatural temperature, and are continually obliged to overwork the lungs. Pulmonary troubles are common among them, and, according to the statistics in Massachusetts, they die at 38.77.

While I was acting as surgeon in the navy in the Gulf of Mexico, I had excellent opportunity, for eighteen months, to study the effects of the high temperature of the engine-room on the health. The coal-heavers and firemen were exposed to a disagreeably high temperature when they were on duty, even though the steamer was not under way. I am sure that there were more cases of disease among the firemen and coal-heavers than among the seamen. They were more frequently attacked by rheumatism and kindred affections, and also sooner become debilitated and unfit for duty. Still it must be admitted, as before remarked, that the human system can bear, without apparent injury, long-continued exposure to heat.

Founders and furnace-men are subject to rheumatic disorders, and die before they are 45. Thackrah maintains that the sudden transitions from heat to cold to which these classes are liable have no noticeable influence on the health. His statement needs to be considerably modified. While it is true that habit to a degree reconciles the system to such changes and irregularities, as, indeed, to almost all others, it is also true that those who are much exposed to excessive heat, with sudden transitions to cold and wet, are more than ordinarily afflicted with the pains and inflammations of rheumatism. More than that, the experience of many surgeons establishes beyond a doubt the fact that the coal-heavers and firemen on ship-board send a much larger relative percentage to the sick-bay than do the seamen and landsmen.

But so far as temperature is concerned, it must be confessed that the human system has a wonderful power of adapting itself to a very wide range, without perceptible injury to health. Man is so constituted that he can bear extreme heat or extreme cold, within certain limits, and keep in health and attain a good longevity. It is also difficult to say just how much exercise the lungs will bear without injury. A large amount of exercise is unquestionably beneficial to the lungs when they are very weak indeed, but this exercise should admit of greater variety than that required in the occupation of glass-blowing. It would be very interesting to investigate the effect of blowing on wind instruments on the health, in order to ascertain the limits to which such exercise can be carried without injury. If we are to judge by the appearance of those who perform in our orchestras, we should say that they were healthy; but plethora is not always strength. We are frequently deceived by appearance in hygiene as in morals. Many who are very thin and pale-featured live to be old.

Those who work in an atmosphere the temperature of which is

considerably higher than that of the system, are, in fact, much of the time in a kind of fever that must consume the vital force.

Their labor being neither elevating nor energizing to the mind, affords no stimulus to the higher nature, by which the injurious features of their occupation may be counteracted.

Stone-cutters and knife-grinders suffer from a kind of bronchitis peculiar to themselves, caused by the irritation of the fine particles continually inhaled. It has been estimated that in one of the Sheffield manufactories 75 pounds of dust are given off every day; that a single packet of needles loses 5 pounds on the grindstone.

Dr. Hall, of the Sheffield Hospital, says that the expectation of life for a grinder at 21 is but 14 years.

Stone-cutters are more out of doors, and have a little greater variety of exercise, but in the nature of things they cannot be healthy or long-lived. In Massachusetts they live to be about 46 years old.

Stone-cutting is to be classed among the unfortunate occupations. It is one of the evil compensations of civilization, that it introduces, and calls forth, and makes necessary many callings that cannot be followed except at the expense of life and health. Making lace, as it is carried on in Brussels, is to be classed among the unfortunate occupations. Those who depend on it for a livelihood are exceedingly pale and sickly. The condition of many of the poor in Europe is frightful indeed. I have seen the peasantry by scores and hundreds wandering about the streets of London and Liverpool, vainly looking for something to do. Persons so distressed are glad to take any offer, even though they well know that they must shorten their lives. The question with them is not one of health, but of existence.

Shoemakers, tailors, jewellers, engravers, labor many hours in cramped positions, breathing most unwholesome air, with but little active exercise of any kind.

The shoemakers in Eastern Massachusetts usually take no pains to ventilate their shops, but work blindly on, 12 or 15 hours a day, around hot stoves, and in crowded rooms. The result is seen in their wan, sallow features, hollow chests, and sunken eyes. Inflammatory diseases do not attack them as readily as they do butchers, teamsters, and outdoor laborers, for the reason that their blood is usually thin and watery, and they have little superfluous adipose tissue which a fever can feed on and consume. The same is true of all who are employed in unhealthy, sedentary occupations indoors.

In the large shoe manufactories, where the rooms are more spacious, and arrangements are made for working in a standing posture, and where machines are used in some of the merely mechani

cal operations, the general appearance and standard of health of the employés is much more favorable than in the old-fashioned, yet still existing cobbling shops.

I have seen thousands of shoemakers, and have had abundant opportunity to study the effects of the occupation on the health. There is no question that, as a class, shoemakers are not very robust or long-lived. And yet we sometimes see cases of great longevity among them. So far as I have observed, they are more careless in regard to ventilation than is necessary. They seem to delight in impure and overheated air. Any one who will take the pains to visit the shops that abound in the towns of Eastern Massachusetts, will be convinced that the shoemakers there are culpably reckless in this particular. Undoubtedly habit has much to do with their apparent indifference on this subject. They become so used to overheated rooms that they actually suffer if the temperature is not above a point that would be agreeable to others. The consequence is that they become very liable to take cold.

Of over 6,000 shoemakers in Massachusetts the average age was 43.12; of 20 in Boston alone, 34.35; of 12 in Rhode Island, 53.91. The Registrar-General of England places them second on the list in order of longevity—most surely a wide discrepancy, and one that we cannot explain, if the shoe business in England is carried on in the same way as in Massachusetts.

Certainly the average of more than 5,000 cases is sufficient to establish the general law in that State, at least, which is the headquarters of the boot and shoe manufacturing interest of the country.

Tailors, jewellers, engravers, and machinists die before they are forty.

Machinists are injured by the filings of iron and steel, by the *confined air* of their shops. They have opportunity for the exercise of the inventive faculties. Their trade is directly associated with engineering and with all forms of machinery, yet the vast majority are mere routinists, perfectly content with the wages of manual labor. They seem to be as low on the tables of longevity as the tailors or jewellers.

They are also injured by the iron filings which they breathe. They die at forty.

Printers are short-lived. They work hard and long, at unseasonable hours, in low, over-heated, wretchedly ventilated apartments, with little opportunity for exercise either of mind or body. Although brought into constant communion with the best thoughts of the world, they are but little more elevated and stimulated by

them than are the type and presses. They are usually reckless and intemperate. That the occupations of type-setting and printing are not necessarily injurious is proved by the fact that in every large establishment there are a few individuals who attain a good old age.

The average age of 441 in Massachusetts was 38.15. Working over bad manuscript, oftentimes by artificial light, makes diseases of the eye very frequent among them.

On the influence of modern improvements on longevity, Dr. Jarvis says :

“Most, if not nearly all, of the improvements in the means and facilities of business labor and the arts, or in domestic and social life in their several ways and degrees, have presently or remotely this effect of increasing the vital power of man.

“The exhibitions of inventions, whose name is legion, in the patent offices and elsewhere—models and descriptions of things new and of things improved—are indications of progress in civilization, of increase in means of sustenance and human comfort, and consequently in human power and longevity.

“Ploughs, mowing-machines, horse-rakes, apple-parers, steel forks, all the kindred adjuncts of agriculture, increase the productions of the earth, while they lessen the labors of the cultivator or make them more effective. By aid of these, grain, hay, roots, fruits, cattle, sheep, &c., are produced more easily and abundantly, of better and more nutritious quality, and at less cost. The whole people, and especially the poor, are better nourished and strengthened, better armed to meet the responsibilities and to bear the dangers of life.”

Bakers, cooks, and confectioners are said to be peculiarly liable to apoplexy, which is due to the fact that their heads are often exposed to sudden gushes of hot air, while in a stooping posture. By the Registrar-General of England, bakers are placed tenth in the order of longevity—only two classes, butchers and shop-tenders, being below them. It has been supposed that the dust of flour may operate injuriously, but if so why are millers so healthy and long-lived?

Miners and colliers, although living under ground and forced to breathe air not unfrequently poisonous, though liable to fatal accidents and explosions, seem to have a better expectation of life in England than either bakers, butchers, or beer-shop keepers.

While I was in Europe, in 1869, a terrible accident happened to a mine in Germany, with fearful loss of life. When I returned home a few weeks afterwards, I found that a terribly fatal accident had also befallen the miners of Pennsylvania. That these accidents should occur in these days, when every miner can have the safety-

lamp, seems inexcusable. The safety-lamp of Sir Humphrey Davy was one of the most beneficent discoveries of modern times. Fortunately, these great accidents occur but seldom. That they must be comparatively rare is evidenced from the fact that the average longevity of miners is quite fair. Thus we find that the human system can, within certain limits, become accustomed to darkness as well as to an unnaturally high temperature.

Painters and plumbers are liable to lead-colic, with its terrible train of woes. Beginners in the painter's trade almost invariably complain of headache and general *malaise*, and some are obliged to abandon the occupation. Even the smell of turpentine has on some a powerful stimulating effect on the kidneys, that cannot fail to be of injury. The average age of over 1,000 was about 46 years.

The unhealthiness of some of our modern occupations is partially made up by the superior rewards of labor. According to Dr. Jarvis, "labor is better rewarded now than in former years. Not only are larger wages paid in money, but the money received procures for the worker better means of sustenance, better protection of clothing and shelter, and more of the comforts of life. In England, in the last of the sixteenth century, a good mechanic, carpenter, mason, painter, wheelwright, earned a bushel of wheat by working nine days and one-eighth. And now, with the present prices of labor and grain, the same classes of mechanics in the United States earn a bushel of wheat in half a day."

Masons and bricklayers live to a fair age. Theirs is not, on the whole, as healthy or as ennobling as that of carpenters and joiners, and does not call for as varied activity of the mind.

Operatives are very unhealthy and short-lived. Working an excessive number of hours, amid the fearful, confusing clatter of machinery, in greasy, over-heated factories, and compelled to bolt down their meals in half the requisite time, we cannot wonder that indigestion and phthisis parch and shrivel their frames, and hurry them away at the early age of *thirty-eight*. Observations in England and America give about the same results.

Nearly all operatives, male and female, are mere routinists, going through their appointed toil with the blind regularity of the shafts and looms.

Draw-filing cast iron is a very injurious occupation. The dust is much more abundant, and the metallic particles much more minute, than in the filing of *wrought* iron. The particles rise so copiously as to blacken the mouth and nose. The men first feel the annoyance in the nostrils. The lining membrane discharges copiously for some time, and then becomes preternaturally dry. The

air-tube is next affected. Respiration is difficult on any increase of exertion; and an habitual cough is at length produced. At the same time the digestive organs become impaired; and morning vomiting, or an ejection of mucus on first rising, is not infrequent. The disorder varies, of course, with the constitution of the individual; but a common termination, when men pursue the employment for years, is bronchial or tubercular consumption.

The *founders* of brass suffer from the inhalation of the volatilized metal. In the founding of *yellow* brass in particular, the evolution of oxide of zinc is very great. It immediately affects respiration; it less directly affects the digestive organs. The men suffer from difficulty of breathing, cough, pain at the stomach, and sometimes from vomiting in the morning. But it should be considered that many of our operatives and artisans are injured as much by the *discomforts and disagreeable surroundings* amid which they labor, as by these special causes, that are inseparably connected with many of the processes in the arts. Comfort as such is healthful.

“Easy beds and chairs, to give good support to the frame when working or when seeking rest; easy carriages for locomotion, smooth roads; varied clothing, suited to the different seasons, and well fitted to the body, trunk, and limbs; food well cooked and digestible, pleasant to the palate and light to the stomach—and manifold other accompaniments of cultivated society, sometimes called mere luxuries and contemptuously despised by the hardy, are yet more than mere luxuries; they in their several ways and degrees are necessary for the fulness of life, in power and duration, which is obtained only in the state of the highest civilization.”—*Jarvis*.

Chemists and Druggists are exposed to various odors, and the evolution of gases, many of which are injurious. Hence the persons employed in laboratories are frequently sickly in appearance, and subject to serious affections of the lungs. There is no question, however, that druggists and chemists may and do attain advanced age. Chemistry, in its highest departments, calls for the best powers of the intellect. My remarks here chiefly refer to those who are engaged in preparing and dispensing chemicals and drugs.

Schools demand our particular attention. Children are crowded in rooms of disproportionate size. The air, consequently, is greatly contaminated, and the vital power is more or less reduced. Even where attention is paid to ventilation, the evil must, in a greater or less degree, exist in *large* schools. Children, and very young children, are kept, too, for many hours daily, in a state as nearly

motionless as it is possible for the masters to produce. The time devoted to amusement is much too little. Instead of two or three hours a day being allowed for play, only two or three hours a day should be devoted to confinement and labor. To fix a child in a particular posture for hours, is vile tyranny, and a cruel restraint on nature.

Young ladies especially suffer from habits of schools. Their exercise is much too limited. Full romping exercise, exercise which brings all the muscles into play, is discouraged. It is vulgar to use the limbs as nature designed; it is vulgar to take the food which nature requires; and young ladies must not do anything that is vulgar. Sitting, moreover, for hours at needlework, or in learning what are called accomplishments, they leave a numerous class of muscles wasting for want of exercise. The muscles of the back are especially enfeebled,—and the spinal column, in youth comparatively soft and flexible, bends under the weight of the head and arms. The spine yields, because the muscles, which closely connect the bones, and by their action keep them in a proper line, are too weak. I am often asked, Why are spinal complaints so common? I answer, that a principal cause is the want of full exercise; we say that young persons are obliged to acquire what is of little or no use in after life, while they neglect what is necessary to the establishment of the body in health and vigor; in short, we have daily to lament that muscular exercise is so often sacrificed to accomplishments and to learning. If it be asked, why are girls more subject to distortion than boys, we reply, because they do not romp like boys. The amusements of boys are far more active than sedentary; those of girls are more sedentary than active. Several hours a day they must devote to music, and frequently a considerable time to the more injurious occupation of drawing; most of the remaining day they spend in finger occupations. Little time is devoted to exercise in the open air, and the exercise they *do* take is such as to chill, rather than invigorate the circulation.

Laborers on farms, and jobbers at various kinds of outdoor work, do not seem to live as long as many classes of artisans who are shut up in bad air, and with little exercise. Of upwards of 17,266 in Massachusetts, the average age was 46.74; of 305 in Boston, 40.30. Undoubtedly most of those thus registered as laborers were employed, more or less, in farm labor; and if country air, and country quiet, and country industry are sufficient to insure longevity, then ought they, at least, to have attained the age of fifty-five. But, as has been remarked, there is a wide gulf between the *status* of the manager of a farm and the workman hired by the

month. The common laborer, owning no land, paying light taxes, feels no interest in his work, beyond the money value represented by it. While, then, his muscles grow hard and strong, his intellectual nature becomes dwarfed and stunted. His very fulness of habit invites and feeds every form of inflammation, and, unsustained by loftiness of moral or intellectual purpose, he easily succumbs and dies before his prime.

It should be considered, also, that laborers, printers, operatives in factories, and artisans generally, are very apt to form dissipated habits, consume large quantities of bad whiskey, breathe bad air, eat bad food, and are surrounded by bad home associations. All these influences—as well as their lack of brain-work—tend to make them short-lived.

Pilots, fishermen, and naval officers are usually very robust, and, in spite of irregularities and intemperance, are quite long-lived. Common sailors who remain before the mast die at forty-five; but those who rise to be commanders of vessels attain to a good old age. From these facts the inference is clear that the sea air, as such, is healthful, both for those who breathe it all their lives, as well as for the invalids who resort to it at intervals. The system does not necessarily become so accustomed to it as to fail to be benefited by its tonic powers, for many who spend their lives upon the ocean represent that appetite and health are much better at sea, even on long voyages, than on shore. Were it not for the healthful medicinal virtues of the sea air, their lives would probably be shorter than that of any class of laborers or artisans on shore.

On the other hand, rheumatism and consumption are very often brought on or aggravated by salt air, although there are cases where both of these diseases are cured by a long voyage. Rheumatism of the chronic variety is exceedingly common among seamen, and on shipboard is often obstinate against every form of treatment.

So far as the air of the sea is appetizing and invigorating to the general system, just so far is it beneficial to consumptives; but that it is irritating to the inflamed surfaces of the lungs, is proved by the experience of the majority of those who resort to it in advanced stages of the disease.

During the late war it was found that many landsmen in the navy were attacked with consumption in its rapid form within a few months after first going to sea; and many were discharged in the second and third stages of phthisis, who at the time of enlistment had never dreamed that they were particularly susceptible to the disease. Not a few who were taken on sup-

ply vessels from northern latitudes to southern, were sent back to die before serving out half their time.

On the whole, then, as pilots and fishermen and lighthouse keepers attain to such good longevity, it is fair to conclude that sea air is, in the main, conservative to health and life.

A few other classes remain to be noticed. *Manufacturers of white lead and friction matches* die early, for reasons too obvious to be stated.

Railroad conductors average but thirty-eight, according to statistics in Massachusetts; but it is not just to infer that the occupation is so very unhealthful, inasmuch as few remain in it after they become old. Yet, as brakemen, express and baggage men are also low down on the tables of longevity, the question arises whether continuous ear-riding is not, of itself, injurious—aside from the liability to accident. Conductors, both on steam and horse railroads, frequently complain of general *malaise*, which they attribute to the continual jarring of the body caused by the motion and sudden stopping of the cars. The average age of 169 railway agents and conductors in Massachusetts is 39.14. Railway accidents, frequent and bloody as they are, will not account for the mortality among employés on the trains. Moreover, they breathe good air, and in nearly all other respects their life is not unhealthy.

It is important to be observed here that statistics of occupations are apt, in one way, to mislead us. *Certain occupations are followed chiefly by old persons, and others by those who are young, or, at least, not past middle life.* Thus, judges do not usually attain their position until somewhat well along in years. Statistics tell us that the average longevity of paupers is high. It would not be right to argue from this fact that pauperism is necessarily favorable to longevity, for many or *most of paupers are paupers because they are old and incapable of taking care of themselves.* School teachers do not usually follow their occupation for life, but only as a temporary expedient. A distinction must, of course, be made between teachers of district or private schools and professors in colleges, who usually make instruction a life calling. It will be found that the average longevity of professors is very high. Unquestionably the duties of a college professor are more favorable to health and longevity than those of the teachers; and yet it would not be fair to argue from statistics merely, since most of our teachers abandon their calling early in life.

Potters ought to attain a fair longevity. Their occupation labors under the same difficulty as that of many other artisans; it is too narrow in its sphere, and demands very little intellectual activity.

Tobacconists do not seem to be as much injured by their calling as was at one time supposed. It has been thought that working in tobacco had a bad effect on the health, but this theory is not sustained by sufficient evidence.

It is now proved, both by general observation and by statistics, that *tobacconists* are, if anything, healthier and longer-lived than the average of indoor operatives. In some of the rooms of tobacco manufactories the workmen live in an atmosphere of tobacco dust, large quantities of which they must take into their lungs with each respiration; and yet they become so entirely accustomed to it that they not only are as free from disease as the average of operatives, but are really longer-lived. It is thought by some that working in tobacco protects the system from consumption and fevers, and some other diseases. The average age of 29 *tobacconists* in Massachusetts was 52.17 years. This is *four years* above that of active mechanics in shops, and only four below that of clergymen, lawyers, and physicians, who are noted for their longevity.

Operators on Sewing-Machines.—It is said that there are over *one million of sewing-machines* in the United States. All these have come into use within 25 years. This is a short time in which to test the effects of operating these machines on the longevity, and the statistical table on this special occupation sheds no light. Many physicians and other close observers now agree that operating on the sewing-machine for an *exclusive* occupation is injurious to the health, especially of women. In operating on our ordinary machines the body is in a sitting position, and only a limited number of muscles of the arms and limbs are used. The position is cramped and unnatural. The movements required become exceedingly tiresome. A very intelligent lady, of more than average health, once told me that half an hour at the sewing-machine completely exhausted her, and that it made her for the time exceedingly nervous.

Besides the general results, operating on sewing-machines sometimes injuriously influences the genital apparatus, and thereby, by its mechanical effects, may give rise to serious local disorder.

Finally, we observe that those occupations of women which are allied to and are a part of her duties as wife and mother, and mistress of the household, are more favorable to her longevity than the special trades.

The average age of 4,070 *females (of all classes)* was 45.31 years.

"	"	"	"	57 nurses	"	61.53	"
"	"	"	"	2,309 housekeepers	"	50.33	"

The average age of	361 domestics	was 46.15 years
" " " "	195 seamstresses	" 45.81 "
" " " "	154 tailoresses	" 45.16 "
" " " "	37 shoebinders	" 43.84 "
" " " "	147 dressmakers	" 41.90 "
" " " "	29 straw-braiders	" 38.69 "
" " " "	84 milliners	" 38.45 "
" " " "	26 straw-sewers	" 31.92 "
" " " "	205 teachers	" 29.99 "
" " " "	466 operatives	" 28.07 "

It will be observed that there is here a regular gradation—that nurses, housekeepers, domestics, are quite long-lived, while those engaged in the special trades of straw-braiding, millinery, attain only an average age of less than *forty*.

It is not necessary to study statistics in order to know that women engaged in many of the special callings are less healthy than those who administer affairs of the household. Operatives in factories almost always have pale and sallow countenances. Dressmaking is far from being a healthy calling, but it is better adapted for woman's temperament and more consistent with long life than toiling in the confined and heated air of noisy factories. Female teachers are usually teachers because they are young. It is not ordinarily an occupation for life. As has been said above, many only teach for a few years of youth until they get married. The same remark will perhaps apply to some of the other trades and occupations in which women engage. Seamstresses, operatives, straw-braiders, often pursue these occupations simply as a temporary means of livelihood until they find a husband. Besides, it should be mentioned that many of these callings in which women engage are carried on in close and overheated apartments.

Making all allowances for the fact that *young* women are more apt to engage in these special trades, these facts are yet very significant.

When woman is allowed to participate actively in politics, and in professional and business life, it is probable that her longevity will be increased. Her present duties do not sufficiently exercise her brain. Home duties give more and a better variety of activity to the brain than working in the mills or standing behind the counter, and are therefore more healthful. In proportion as woman uses her fingers less and her brain more, in that proportion, other conditions being favorable, will she become longer-lived.

There is, then, a difference of at least ten years in favor of those

who labor in the household. Stern necessity compels the widows and unmarried of civilized lands to engage in irksome mechanical employments, but it would be far better for woman's health and happiness if the laws of society made it more honorable to wait on the door and preside over chambers than to sew on coats or make straw hats.

Of the relative age of the married and the unmarried, these statistics give us no information.

It has been shown, however, by other statistics, that the *married live much longer than the unmarried*; that widows and widowers have less expectation of life than if they remained all their lives in the married state.

It is a very suggestive argument in favor of the healthfulness of the married state that, in spite of all its necessary cares, and anxieties, and distresses, in spite of its frequent and life-long uncongeniality and misery, in spite of the sorrows of parturition, and all the nameless trials that children cause their parents, yet the married live much longer than the spinsters and bachelors.

Statistics of this kind are in part fallacious, for those who have good constitutions, good habits, means of subsistence—in a word, the elements that favor longevity, are most likely to marry, and would live long if single. The care of the children, the unnumbered duties of the household, the perpetual battle for bread and shelter, the continuous planning and forecasting, the constant activity of the emotional and moral nature—all these things, *on the average*, tend to health and longevity.

On this important subject of longevity, Dr. J. V. C. Smith remarks as follows:

“1st. Short persons, of sound constitutions, unimpaired by violations of natural laws of health, have a prospect of a longer life than tall persons, all other circumstances being equal.

“2d. Females having particularly long necks have shorter chests and narrower at the base than those whose necks are of the ordinary appearance.

“3d. Diseases of the lungs do more frequently exist in tall men than in those of medium height, or those between five feet seven inches and five feet nine; and a hereditary tendency to pulmonary consumption is thought to be found in tall families more frequently than in others.

“4th. When pulmonary disease is hereditary in a family, children are not unfrequently born with tubercles in the tissues of the lungs. Years may be required to develop them, unless they are subjected to some exciting causes. Slight inflammatory action in the

mucous membrane of the bronchial tubes sometimes suddenly extends to them and quickens them into activity, and ulceration soon appears, destroying the delicate texture of the neighboring air-cells, interrupting the aëration of the blood, and death follows."

DR. GRISCOM'S PORTRAITURE OF A MAN DESTINED TO LONGEVITY.

"A fully developed *osseous frame* and *muscular* organization.

Stature not too tall, rather middle size, somewhat thick-set.

A capacious chest.

Shoulders rather round than flat.

Pulse strong and regular.

Veins full at extremities.

Head not too large.

Neck neither very long nor short.

Abdomen not projecting.

Hands large, but not too deeply cleft.

Foot rather thick, and broad than long.

Skin strong, smooth and clear.

Complexion not too florid, nor too ruddy in youth.

Hair approaching rather the fair than black.

Voice strong, with faculty of retaining the breath long without difficulty.

Senses acute and clear, but not too delicate.

Appetite good and *digestion* easy.

Teeth sound, eats slowly, without extra thirst.

Excretions all regular and free.

No violent passion.

Temperament sanguine, with a little of the phlegmatic.

Dr. Smith says: "Both men and women born of parentage remarkable for longevity inherit vitality, and are generally tenacious of life. They occasionally reach a very advanced period, being rarely the victims of acute or epidemic diseases.

"2d. Children born of parents one but not both of whom inherit long life, do not equally inherit vitality. In any considerable number of brothers and sisters born, some of them will live to be aged, but not all.

"3d. Men or women with particularly long bodies, otherwise well developed, and governed by all the circumstances and conditions heretofore noted, give satisfactory physical signs of a long life.

"4th. Married women who have borne children, if in comforta-

ble circumstances, especially in the country, have the prospect of a longer life than those who were never mothers.

"5th. Widows have not the prospect of so long a life as married women.

"6th. Widowers have not a prospect of so long a life as married men. Married persons, if happily connected, have a prospect of a longer life than the unmarried.

"7th. Unmarried women in health, easy in their circumstances, and pleasantly conditioned in society, have the prospect of a longer life than unmarried men of the same social condition.

"8th. Unmarried women, dependent upon their personal efforts and harassed by anxieties, have not a prospect of a long life.

"9th. Excitable, fractious men or women, when married, who are subject to paroxysms of sudden anger, peril their prospects for a long life.

"10th. Both men and women, although in easy circumstances if of a jealous, irritable disposition, or subject to morose exhibitions of temper—married or unmarried—have not a prospect of long life. Still a few out of many may sometimes live to be aged.

"11th. Men or women who have changed their residence from a cold or moderately temperate climate of one continent to a similar climate in another, if comfortable in their circumstances and industrious and correct in their habits, do not have their vitality impaired.

"12th. Men or women who thus remove from one continent, as from Europe to America, or from America to Europe, if inclined to excesses which impair the vital force, may die prematurely."

LONGEVITY OF ANIMALS.

This is a subject of exceeding interest, and is very suggestive.

Hufeland, in his excellent work, "The Art of Prolonging Life," has some reliable facts and theories in regard to longevity that I present below.

The facts he records are reliable, even though we may not agree with all of his theories.

Among other general principles he enumerates the following:—

"1st. *Bulk shows a greater provision of the vital or plastic power.*

"2d. *Bulk gives more vital capacity, more surface, more external access.*

"3d. *The greater mass a body has, the more time is required before it can be wasted by its external and internal consumptive and destructive powers.*"

"Of the tenacity of life we have instances truly astonishing. *Tortoises* have been seen to live a considerable time without the head; and frogs when their hearts were torn out have still continued to leap about. *A tortoise has existed six whole weeks without any food*; and this sufficiently shows how small its intensive life is, and how little need it has of restoration. Nay, it is proved that toads have been found alive inclosed in stones and blocks of marble. Whether they were shut up there in the egg or as perfect beings, both cases are equally astonishing; for what a number of years must have been necessary for the marble to generate, and before it could acquire its solidity!

"This shows how much influence the power of regeneration has in prolonging life. A great many dangers and causes of death are thereby rendered harmless; and whole parts which have been lost are again renewed.

"To this belongs that phenomenon of the skin which we find among most animals of this class.

"*Snakes, frogs, lizards, &c.*, cast their skin every year; and it appears that this method of becoming again young contributes very much to their support and duration. Something of the like kind seems to prevail throughout the whole animal world; birds change their feathers, as well as their bills, which is called moulting; insects transform themselves, and most quadrupeds change their hair and their claws.

"*The tortoise and crocodile attain to the highest age, as far as we have yet been able to learn from observation.*

"*The tortoise*, an indolent, slow in all its motions, and phlegmatic animal, and which is so long in growing that in twenty years one can scarcely observe an increase of a few inches, lives to the age of a hundred years and more.

"*The crocodile*, a large, strong, vigorous animal, enclosed in a hard coat of mail, incredibly voracious, and endowed with extraordinary powers of digestion, lives also very long, and, according to the affirmation of several travellers, is the only animal which grows as long as it exists.

"It is astonishing what instances of great age may be found among *fishes, the cold-blooded* inhabitants of the waters. We know from the ancient Roman history that in the imperial fish-ponds there were several lampreys (*muraenæ*) which had attained to their sixtieth year, and which had at length become so well acquainted and

familiar with man, that *Crassus, orator, unam ex illis de fleverit*. The pike, a dry, exceedingly voracious animal, and carp also, according to undeniable testimony, prolong their life to a hundred and fifty years. The salmon grows rapidly, and dies soon. On the other hand, the perch, the growth of which is slower, preserves its existence longer. It appears here worthy of being remarked, that natural death occurs more rarely among fishes than in any other part of the animal kingdom.

“The law of the transition of one into another according to the right of the strongest prevails here far more generally. One devours another—the stronger the weaker; and one may assert that death exists less in the water, as the dying pass immediately into the substance of another living being, and consequently the intermediate state of death is less common than on land. Putrefaction takes place in the stomach of the stronger. This regulation is a proof of exalted and divine wisdom. *If the innumerable millions of the inhabitants of the waters which die daily remained only one day unentombed, or, what is the same thing, not devoured, they would speedily diffuse abroad the most dreadful pestilential evaporation. In water, where vegetation, that great means of correcting animal putrefaction, exists in less extent, every cause of corruption must be guarded against, and on this account continual life must prevail.*”

According to Grindon, “*the longest-living mammal, after the whale, appears to be that affectionate, docile, and sagacious creature, the elephant.* Nothing is known positively as to its lease, but the estimate of one hundred and fifty years is certainly not beyond the mark. The rhinoceros and the hippopotamus are reputed to come next, a maximum of seventy or eighty being assigned to each of these huge brutes; then, it is said, follows the camel, a meagre, dry, active, exceedingly hardy animal, whose useful life extends not infrequently to fifty. The period, reckoning by decrements, between fifty and thirty is reached by few. The stag, longæval only in romance, dies at thirty-five or thereabouts; the leopard, bear, and tiger fail fully ten years earlier; twenty-five or thirty is the ordinary maximum of the horse and ass, though the severe treatment of man rarely allows them to reach even this.

“The mule, it is worthy of notice, is stronger lived and becomes older—a circumstance anticipated in plants, where hybrids frequently live longer than their parents. The cause is probably the same in both, and to be found in their infertility, whereby their whole vigor is left at liberty for self-maintenance, instead of being expended in two directions. Many leases expire between twenty and ten.

The former seems to be the ordinary maximum of the lion as reached in menageries, though when unconfined it evidently lives longer, for it has sometimes been found without teeth. Twenty is the limit also with the bull, despite his great strength, size, and solidity; the dog and the wolf seldom pass eighteen; the sheep, the goat, and the fox rarely live more than twelve.

“The *maximum of the domestic cat is said to be ten*, that of the *rabbit, hare, and guinea-pig seven or eight*, that of the *mouse five or six*, and of other such little animals about the same. As to the leases of the remainder of the four-footed creatures of our planet, excepting a dozen or so, zoology is entirely uninformed, and until they shall have been ascertained of course nothing like a proper list can be constructed. The animals which have been mentioned are certainly among the chief, and indicate the scope and limits which a table of ages when completed will exhibit; but so far the list is only like a boy’s first map—unfurnished, except with the names of the seas, the metropolis, and his native town. *One thing is plain, that man, regarded as a member of the animal kingdom, has no occasion to murmur at the shortness of his lease of life; but should rather congratulate himself, seeing that he enjoys a considerably longer term, even in his ordinary duration, than the great mass of his physiological fraternity; while it is pretty certain that there is not an animal of his own size that does not return to dust before half as old.* The scale of ages attained by birds is much about the same as that of mammals, but taking one with another they probably live longer in proportion to their bulk. No creatures are better adapted for longevity—they are peculiarly well clothed, for no covering can be more complete, or better calculated to preserve warmth than their soft, close-lying feathers; and as these are renewed periodically they are maintained in the best possible condition. Many birds also cast their beaks and acquire new ones—a most advantageous exchange for them, since they are thereby rendered so much the better able to feed themselves. Besides these peculiarities, birds live almost entirely in the fresh air, and their habits are cheerful and sportive—conditions eminently conducive to long life.

“As to the particular terms of life which obtain among them, Flourens says he knows ‘nothing certain.’ *There is plenty of evidence, nevertheless, that such birds as the eagle, the vulture, the falcon, and the swan, far surpass all others in longevity, and attain ages so remarkable as often to exceed very considerably that of man. Even the crow is reputed to live a hundred years, and the raven no less than ninety.*

“There have been instances of the parrot living for sixty years a

prisoner, and its age when captured would have to be added. Pelicans and herons are said to reach forty to fifty years; hawks thirty to forty; peacocks, goldfinches, and blackbirds about twenty; pheasants and pigeons about the same; nightingales fifteen, the robin a little less; domestic fowls about ten; thrushes eight or nine; wrens two or three. Concerning the ages of fishes even less is known than about birds. It is vaguely believed of them that they are longæval. The reasons for this opinion are, that the element in which they live is more uniform in its condition than the atmosphere, and that they are less subject in consequence to those injurious influences which tend to shorten the lives of terrestrial creatures; and, secondly, that their bones, being of a more cartilaginous nature than those of land animals, admit of almost indefinite extension, so that the frame is longer in growing to maturity.

In regard to the longevity of tortoises, Grindon substantially indorses the views of Hufeland above quoted.

"Reptiles attain surprising ages. The tortoise, which is so slow in growing that in twenty years an increase of a few inches is all that can be detected, has lived even in captivity above a century. One placed in the garden of Lambeth Palace, in the time of Archbishop Laud, lived there till the year 1753; and its death was then induced seemingly through misfortune rather than old age.

"The enormous creatures of this kind, natives of the Galapagos, undoubtedly live twice or thrice as long as the common species. An individual possessed some years back by the London Zoological Society had every appearance of being at least a hundred and seventy-five. Even these immense ages were probably far exceeded by the great fossil testudinata of the Himalayas. It is easy to see the cause of such longevity. The same law which obtains in the mechanics of inanimate matter operates in the organisms of vitalized matter—namely, that which is gained in time must be lost in power. The active habits which in short-lived animals accelerate the vital processes and bring the lease to an early close, here are no longer found.

"The tortoises have no excitable nervous system to wear out the durable materials incased in their impenetrable armor. They spend the greater part of their lives in inactivity, and exist rather than live. By analogy it may be inferred that the loricate and ophidian reptiles reach an age fully as advanced as the tortoises. The crocodile, large, strong, vigorous, enclosed in a coat of mail, and incredibly voracious, is without doubt exceedingly long-lived. The larger serpents, also slow in growth, and passing a considerable portion of their lives in semi-torpor, are also unquestionably long-

æval. Feeding voraciously at long intervals, so familiar in the case of serpents, seems invariably associated with prolonged life. As regards the amphibia, Snellie refers to a toad known to have been at least thirty-six. The frog, which by reason of its slow growth in this climate, at least, is incapable of producing young till its fourth year, reaches, however, what in proportion to this late puberty is the very inconsiderable age of no more than from twelve to about sixteen. Insects for the most part are short-lived, especially after their last transformation. Some after acquiring their wings live for only the remainder of the day.

"In calculating the ages of insects, of course, they must be reckoned from the hatching of the egg. Different species exist two, three, and even four years in the grub state, then a considerable time in the chrysalis, the winged state being merely that of completed maturity. That which especially marks the latter is the fitness of the creature for propagation, and this as the period of its bloom is also the briefest. The ephemeræ in their winged state are not even creatures of a day. Scarcely a single gnat as such survives a week; not half the beetles, nor any of the grasshoppers nor tipulæ, those long-legged dancers of the autumn, enter on a second month. A fortnight sees the death of almost every kind of butterfly and moth. One of the longest-living insects is that brilliant beetle, the scarabæus auratus, or rose-chaffer—the only one that feeds upon the flower from which it takes its English name.

"After four years spent as a grub and a fortnight as a chrysalis, it has lived in captivity from two to three years more. That curious but treacherous and cruel creature, the mantis religiosa, or praying cricket, which holds up the foremost pair of its long, desiccated, skeleton legs, as if in the act of prayer, is said to attain a full octave."

LONGEVITY OF TREES AND PLANTS.

It is quite difficult to obtain reliable facts from observation in regard to the age of trees, because some species live hundreds and thousands of years, and must therefore be watched by many generations of men in order to ascertain their exact age. It is therefore customary to count *the rings that are formed* in the growth of trees that attain to great age.

On this subject Hufeland writes as follows:

"Plants may all, however, be reduced, according to their duration of life, into three principal classes: annual, or properly only semi-annual, which grow up in spring and die in autumn;

biennial, which die at the end of the second year ; and, lastly, perennial, the duration of which extends from four to a thousand years.

“ All plants of a soft, watery constitution, and which have fine, tender organs, have a short life, and last only one or at most two years. Those alone which have stronger organs and tougher juices exist longer, but wood is absolutely necessary in order to attain to the highest degree of vegetable existence.

“ Even among those which live only one or two years, a remarkable difference may be observed. Those which are of a cold, insipid nature, and destitute of smell, live, under like circumstances, not so long as the strong-scented balsamic plants, which contain more essential oil and spirits.

“ *Lettuce, wheat, oats, barley, and all kinds of corn live no more than a year ;* but, on the other hand, thyme, mint, hyssop, balm, wormwood, marjoram, sage, &c., can live two years, and even longer. *Shrubs and small trees can live sixty years,* and some even twice that number.

“ The *vine* attains to *sixty or a hundred* years, and continues fruitful at the greatest age. This is the case also with rosemary. The acanthus and ivy, however, can exceed the age of a hundred. Among many such, for example, as the different kinds of *rubus* (common bramble, blackberry, raspberry), it is difficult to determine the age, as the branches creep along the ground and always form new plants, so that it is almost impossible to distinguish the new from the old ; and by these means they make their existence, as it were, perennial. Those which attain to the highest age are the greatest, strongest, and hardest trees ; such as the oak, the lime-tree, the beech, the chestnut, the elm, the palm-tree, the cedar, the olive, the palm, the mulberry-tree, and the baobab. We may with certainty affirm that some of the cedars of Lebanon, the celebrated chestnut tree, *di centi cavalli*, in Sicily, and several of the sacred oaks under which the ancient Germans performed their religious ceremonies, may have attained to the age of a thousand years and more. These are the most venerable, the only now existing testimonies of the ancient world, and inspire us with reverence and awe when the rustling wind plays through their silvery locks, which once served to overshadow the Druids and our wild ancestors clothed in their bear-skins.”

Grindon remarks on the longevity of trees :

“ How vast are the periods of life allotted to the longæval trees may be judged from the following list of ages known to have been reached by patriarchs of the respective kinds :

"Cercis.....	300 years.	Walnut.....	900 years.
Elm.....	335 "	Oriental Plane..	1,000 "
Ivy.....	450 "	Lime.....	1,100 "
Maple.....	516 "	Spruce.....	1,200 "
Larch.....	576 "	Oak.....	1,500 "
Orange.....	630 "	Cedar.....	2,000 "
Cypress.....	800 "	Schubertia.....	3,000 "
* Olive.....	800 "	Yew.....	3,200 "

"Four and five thousand years are assigned to the *Taxodium* and the *Adansonia*, and *Von Martius* describes locust-trees in the South American forests which he believes to have begun their *quasi* immortality in the days of Homer. Whether or no, it may safely be asserted that the world possesses at this moment *living* memorials of antiquity at least as old as the most ancient monuments of human art. How grand and solemn is even the thought of a tree coeval with the pyramids of Egypt and the sculptures of Nineveh, yet still putting forth leaves, and inviting the birds to come and 'sing among the branches!'

"Well might the old preacher of Alexandria discern in a tree *the terrestrial image of heavenly truth*.

"*The age may be estimated by ascertaining as nearly as possible the annual rate of increase, then taking the diameter of the trunk at about a yard from the ground, and calculating by rule of three.* Thus, if in the space of an inch there be an average of five annual layers, a hundred inches will indicate five hundred years of life. The latter method requires to be used, however, with extreme caution, because of the varying rate of earlier periods of life, trees increase much faster than when adult. The oak, for instance, grows most rapidly between its twentieth and thirtieth years, and when old the annual deposits considerably diminish, so that the strata are thinner and the rings proportionably closer. Some of the oak become thinner after forty, those of the elm after fifty, those of the yew after sixty. Unless allowance be made for this, and also for the irregular thickness of the layers, which vary with the positions of the tree in regard to the sun, errors are inevitable.

There are trees which are altogether destitute of rings. These

* There are olive-trees in the supposed garden of Gethsemane which have been *estimated* at 2,000 years; but these are probably mere descendants of those connected with the narratives of the Gospel, put forth originally as suckers from their roots, and to be regarded rather as restorations than as identically the same.

belong to the class called *endogens*, of which the noblest and typical form is the *palm*. Here the sign of age is usually furnished by the scars or stumps of the fallen leaves, which are of prodigious size, few in number, and produced only upon the summit of the lofty, slender, and branchless trunk. A certain number of new leaves expand every year, and about an equal number of the oldest decay; so that, by taking the total of the scars, and dividing it by the average annual development of new leaves, a tolerable approximation may be come to. But it can rarely be relied upon; it is a method, indeed, by no means universally practicable, the scars of the fallen leaves being very variable in their degree of permanence in different species.

Of the *potential* longevity of a tree or plant, a fair estimate may be arrived at from a variety of circumstances.

For example, there are relations between the duration of life and the quality of the *fruit* which plants produce. Those which give tender and juicy fruit, or at all events such trees as do this, are in general shorter-lived than those which yield hard and dry fruit, and these are shorter-lived than such as produce only little seeds. The apple and the pear live shorter lives than nut-trees, which are out-lived in turn by the birch and the elm, as these are by the major part of the coniferæ, in which family there is probably not a species that does not flourish for at least a hundred years.

The *Alpine* firs and *larches* frequently attain *five centuries*, and even the common red pine and the Scotch fir reach three to four. With a few exceptions, the seeds of the whole family are noticeably small, though the containing cones may be of considerable size. One of the greatest trees in the world, the *Wellingtonia gigantea* of California, a member of this tribe, with an estimated maximum age of 2,000 years, has a beautifully formed but remarkably small cone, and seeds in proportion. Such trees as the birch, the elm, and the conifers are useful to man for their timber, a service rarely rendered by the fruit-bearers. Trees, again, that yield pleasant fruit fit for human food ordinarily live for shorter periods than those of which the produce is bitter and austere and unserviceable to man as an edible. *Most, if not all of the plants on which man in his civilized state depends for food, are exceedingly short-lived.* The cerealia or corn-producing plants, as wheat, rice, barley, and oats, are annuals, without exception; so are nearly all kinds of pulse. The large classes of esculent vegetables, represented by the turnip, carrot, and cabbage, are also either annual or biennial.

“How much man has benefited by this wise arrangement, it is impossible to estimate. Did his daily bread grow on longæval trees.

like acorns, asking no care and toil, the most efficient means to his development would have been wanting, as is still evidenced in the lands of the cocoa-nut and the banana; but depending, as he has been so largely obliged to do, on *annual* plants demanding incessant care, they may be gratefully regarded as the prime instrument of his rise in intelligence and morals.

"It may be taken as an axiom in vegetable physiology, that, *cæteris paribus*, no plant dies a natural death until it has ripened seeds. If its life be endangered by penury of food or mutilation, the entire vital energy of the plant concentrates itself in the production of a flower, it ceases to put forth leaves, and expends its whole force in efforts to secure progeny.

"This is strikingly exemplified in hot, dry gardens, and by summer waysides, where, as if conscious of the impending danger, plants ordinarily of considerable stature begin to propagate while scarcely an inch high."

THE LAWS OF HEREDITARY DESCENT.

The laws of hereditary descent are the most potent of all the influences that determine the character and destinies of individuals and of nations. *Climate* and *diet*, powerful as they are, must always yield to the unconquerable might of *race*, and can of themselves work only incidental and transient changes in the original types.

The fundamental law of hereditary descent that has been ascertained by science and experience is, *that every quality of organic existence tends to be hereditary*. This law, so far from being a truism, as it might at first appear, has not been even approximately understood until recent times, and even now is not generally recognized or appreciated. Not only the general characteristics of mind and body, but also the distinct peculiarities of look, voice, manner, all the parts of the system, must be equally or nearly so. The transmissibility of exceptional formations, such as supernumerary fingers or toes, can only be explained by the general law that every quality of organic existence tends to be hereditary.

The transmissibility of physical peculiarities were very well illustrated by the celebrated Lambert family, or "*porcupine men*." Edward Lambert, when a boy of fourteen, was exhibited to the

Royal Society, and was then described as having a skin that resembled the bark of a tree. "The bristly parts, which were chiefly about the belly and flanks, looked and rustled like the bristles or quills of a hedgehog, shorn off within an inch of the skin." The boy grew to be a good-looking and healthy man. He married, and had six children, *all of whom had the same covering as their father.*

All constitutional, and very many local diseases, or tendencies to diseases, may be hereditary. It has been, and is now, the custom to speak of the hereditariness of certain maladies, as consumption and the like, as though they were exceptions to the general law. The truth is that all vices of the system may be transmitted. Consumption, being a frequent as well as very fatal disease, has long been recognized as transmissible; but it may be questioned whether it is any more so than many other diseases, which are less serious in their issue, and, therefore, less dreaded and less observed. Gout and rheumatism are very transmissible, especially the former. Probably there are very few cases of the constitutional varieties of these diseases that cannot be traced to some of the ancestors of the sufferer. Insanity, apoplexy, and other symptoms of cerebral diseases, are certainly as transmissible as tuberculosis of the lungs. We may say, in general, that all diseases of the nervous system are very hereditary. Some families exhibit through many generations a tendency to disorder of the digestive system, and complain of dyspepsia and derangement of the liver and bowels. Others inherit weakness of the circulating apparatus, and are annoyed by affections of the heart, such as enlargement, dilatation. A hereditary tendency to nervous disease may break out in one member of a family as St. Vitus' dance, in another as epilepsy, and in another as apoplexy with paralysis; or it may manifest itself in the form of hypochondriasis, or actual insanity. The records of insanity alone—which is merely one of the symptoms of the tendency to nervous disease—show that a very marked proportion are hereditary. Mr. Sedgwick records the case of a man whose brother, father, and four uncles were all insane; and of a Jew whose father, mother, and six brothers and sisters were all victims of the same disease. Suicide, which is one of the results of insanity, also seems to run in families, and instances have been recorded where a large number of near relatives have died by their own hands.

Many of the diseases of special organs are also subjected to inheritance. Cataract, strabismus or squinting, long and short-sightedness, the incapacity of distinguishing colors, and some forms of amaurosis, are also hereditary. Certain morbid conditions of the

middle ear, that give rise to deaf-mutism, are also transmitted from parents to offspring. Thus our illustrations might be extended almost indefinitely. It must, however, be allowed that we very often fail in determining the hereditability of many of these diseases, especially when we are misled, as we are so often apt to be, by the *name* of the symptom. Certain skin diseases, with their large variety of modifications, are transmitted from parent to offspring; and especially is this true of those maladies that are the direct punishment of vice. Baldness and premature grayness of hair run in families to a very marked degree, and without any seeming dependence on the general health.

In the animal creation, so far as has been observed, diseases and morbid conditions are as hereditary as in man. One of our highest authorities on this subject—Youatt—states very emphatically that “there is scarcely a malady to which the horse is subject which is not hereditary.” Darwin, who has traversed the whole literature of the subject, states that all authors agree that “contracted feet, ring-bones, curbs, splints, spavin, founder, and weakness of the front legs, roaring or broken and thick wind, melanosis, specific ophthalmia and blindness, crib-biting, jibbing, and ill-temper, are all plainly hereditary.” The diseases of cattle are probably just as transmissible as those of horses; but they have not been studied as minutely, and therefore the facts on the subject are not as abundant or reliable.

But, very fortunately, this subject has a brighter aspect. Good qualities are just as liable to inheritance as bad ones, and the characteristics of physical strength, health, and endurance may be as permanent in different generations as incidental diseases or deformities. The single quality of physical size may characterize even widely divergent branches of a family through many generations. There is no one who cannot recall, more or less, families, most of whose members are noted for striking tallness or largeness of form. King Frederick of Prussia collected an army of very tall men, and it was remarked that their descendants in the vicinity where they were quartered were of remarkable stature. Hardness and firmness of muscle, united with a very small amount of adipose tissue and a great capacity of endurance—the signs of what is known as the bilious organization—are family characteristics. I know a family, some of whose members, even in quite divergent branches, are noticeable for their thinness, the hardness of their muscles, and general wiriness of constitution, that renders them capable of undergoing much and living long, though seemingly very frail. Plethora and pursiness are transmissible, and may characterize the weakly

as well as the strong. Fat, when excessive, is a sign of disease, or, at least, of a morbid tendency; and when it is the result of a strong hereditary disposition, all attempts to retard or limit its formation are very discouraging. For remarks on this subject, see *Corpu-lence*.

Another law of hereditary descent is, that inherited qualities manifest themselves at corresponding ages, and harmoniously with each other. But I have not space to develop this subject in detail, interesting and suggestive though it be.

It is not unfrequently the case that the children of talented ancestors, after a youth of idleness or stupidity, are suddenly, at the outset of maturity, transformed into energetic and efficient members of society, and ever afterward prove themselves worthy of those from whom they are descended. We are often surprised that the children of sober and industrious parents are wild and lawless, and we are inclined therefore to doubt the potency of hereditary influence; but if we look back far enough we shall find oftentimes that their fathers or some of their ancestors were similarly wild and lawless in their youth, and were only converted on reaching mature years. It is a fact which I have long observed, that the children of pious and intelligent parents, however reckless or dissipated they may be in their younger days, usually grow up to be worthy and useful citizens. Those who are inclined to lose their faith in the power of hereditary descent, or in the truth of the inspired promise, "Train up a child in the way he should go, and when he is old he will not depart from it," because they see so much of degeneracy and vice in the offspring of noble and illustrious ancestry, would often find consolation in the subsequent career of those who began life by disgracing their parentage. It is often said that the children of clergymen are worse than those of any other class; but statistical facts and general observation prove directly the contrary. If the sons of clergymen, especially in our large cities, oftentimes rebel against moral and social laws, just like thousands of others whose fathers do not happen to be so conspicuously before the community, it is nevertheless true that in after years they often develop entirely new phases of character from early manhood to old age, prove themselves honorable and useful, and not unfrequently acquire distinguished fame in various departments of human activity.

In regard to *hereditary genius*, these points can, I think, be established by statistics:

1. That the great majority of the talented and distinguished of both sexes are closely related to others who are similarly distinguished, or who, at least, have more than average ability.

2. That not only general intellectuality, but special aptitude for literature, music, art, war, politics, and finance run in families so markedly, that men of genius, who number no one of superiority or eminence among their kinsmen, are to be regarded as exceptions.

3. The tendency is for talent to concentrate itself in families. The number of intellectually aristocratic houses is continually increasing, even under our democratic institutions, and must continue to do so in the future more than in the past, because society is becoming more and more stable.

If our marriages were arranged from motives of advantage and not of affection, the brains of the country might in time become almost exclusively concentrated in a limited number of powerful families.

Another law of hereditary descent is, that *the qualities of organic existence may be derived from very remote as well as from immediate ancestors*. This law is a logical inference from the first, and like that applies more or less to all organic life. It has long been observed by breeders that animals exhibit a tendency to assume the peculiarities of distant ancestors, and this tendency has been variously designated as *reversion* or *atavism*.

A want of a proper knowledge on this subject has led to a great deal of confusion and obscurity, both in the minds of the profession and of the laity. Hereditary diseases of all kinds are liable to skip a number of generations, and when they reappear in a family are oftentimes regarded as spontaneous by those who do not look back into the history of the progenitors. Parents who are themselves in perfect health, and whose ancestors, so far back as they may remember, died at an advanced age, are sometimes astonished by the appearance among their children of consumption, or some other hereditary disease, that may have skipped, perhaps, a number of generations. Insanity, epilepsy, St. Vitus' dance, and all the manifold diseases of the nervous system, are thus hereditary.

It must be conceded that these constitutional diseases cannot in all cases be traced to a hereditary origin. There are throughout the land many cases of consumption, of insanity, of epilepsy, that cannot be said to be the heritage of any ancestry, distant or remote. There are in our modern society thousands of exciting causes that may bring on constitutional disease, even when no hereditary taint exists; and yet, if we study closely into family history, we shall find that the number of such cases is much less than is commonly believed. In the majority of instances of constitutional disease, exciting causes act upon a hereditary tendency.

INTERMARRIAGE OF RELATIONS.

This is a question that has attracted deserved attention. The most varying opinions have been expressed, and are now held by the profession on this subject. There are those who hold that it is wrong for blood relations to intermarry, who are utterly opposed to the union of cousins of the first degree, because the offspring of such marriages are apt to be degenerate. There are those, on the other hand, who believe that the offspring of blood relations who intermarry is not in the average less healthy than are the children of those who are not related to each other. Statistics have been collected on both sides, but the weight of evidence seems to show that the popular impression is correct, and that the children of cousins who marry are not as healthy as the average.

That very near relatives—brothers, sisters—should not marry, is abundantly clear. The instincts of mankind, the laws, customs, and usages of all nations, barbarous as well as civilized, are opposed to the crime of incest.

The only doubt is in regard to the marriage of *cousins*. My own view is, that the difference between marrying cousins and marrying nearer relatives is only one of *degree*.

As a general rule, cousins should not marry, and yet it is not necessary that the rule should be rigidly observed. It is much better to marry a cousin than to marry one who inherits a positive tendency to insanity, or even to consumption. When cousins marry there is danger that *any evil tendency that may exist in the family may be heightened*; but *cousins are not necessarily related*. Persons may be cousins by name and by law, and yet have no traits or elements in common. They may be so widely separated from each other by the influence of the families into whom their parents married, that they are really of different blood. It is obvious that such persons may marry, and should have as healthy offspring as though they were not *legally* cousins.

Each case must be studied by itself. There is no unvarying law.

On the other hand, cousins, even of the third degree, who closely resemble each other in important features of mind or body, who give unmistakable evidences of having descended from a common stock, ought not to marry. Here, also, each case must be studied by itself.

These are the conclusions to which I have gradually arrived, and which, if I mistake not, the profession are slowly beginning to accept.

The scope of this book will not allow me to discuss the subject in any greater detail.

Dr. Nathan Allen, of Lowell, who has written excellently for the people on kindred subjects, has recently sent me a pamphlet on the Intermarriage of Relations, from which I make the following extracts :

“ Dr. S. M. Bemiss, of Louisville, Ky., published a large collection of facts bearing on this subject in the *North American Medico-Chirurgical Review* for 1857. Says he: ‘ By much labor I have obtained statistical accounts of 34 marriages of consanguinity ; of this number 28 were between first cousins, and 6 between second cousins. Of the total number of marriages, 27 were fruitful and 7 sterile. The 27 fruitful unions produced 192 children. Of the 28 marriages of cousins, 23 were fruitful and 5 sterile ; of the 6 marriages of second cousins, 4 were fruitful and 2 sterile. In both these latter instances of sterility the female was the product of a marriage of consanguinity.

“ ‘ Of the 192 children resulting from these marriages, 58 perished in early life. In 24 of the 58 deaths the causes were stated as follows : Of consumption, 15 ; of spasmodic affections, 8 ; of hydrocephalus, 1. Of the 134 who arrived at maturity, 46 are reported as healthy ; 32 are set down as deteriorated, but without absolute indications of disease ; and 9 are returned without any statement as to health or condition. The remaining 47 all possess such abnormalities as to render them the subjects of particular observation. These are classed as follows : 23 are scrofulous ; 4 are epileptics ; 2 are insane ; 2 are mutes ; 4 are idiots ; 2 are blind ; 2 are deformed ; 5 are albinos ; one has chorea, and 6 have defective vision. While these statistics present a goodly number of children, there was an unusual number tuberculous (15 dying of consumption) or scrofulous (23), making 38 in this class. Nearly one-half inherited, probably, an imperfect organization.’

“ In the Transactions of the American Medical Association for 1858 is an extended paper by Dr. Bemiss on this subject, made up mostly of tables, reporting 833 such marriages, giving the time of marriage, the occupation, the temperament, the health, habits, etc., of the parents, with the number of children, their defects, peculiarities, etc., etc. The whole number of children was 3,942, of which 1,134 were defective ; 145 deaf and dumb, 85 blind, 308 idiotic, 38 insane, 60 epileptic, 300 scrofulous, 98 deformed, and 883 died early. The proportion reported deaf and dumb, blind, idiotic, scrofulous, and deformed, is altogether larger than what would be found among the children of families in the community, taking

them indiscriminately. The degree of relationship in these cases is thus given: 10 marriages between brother and sister, or parent and child; 12 between uncle and niece, or aunt and nephew; 61 between blood-relations, who were themselves the descendants of blood-relations; 27 between double-first cousins; 600 between first cousins; 120 between second cousins, and 13 between third cousins. In a careful examination of the several degrees of consanguinity here given, the hereditary effects are found to be the worst in the first and second degrees, in the third not so bad; but when we come to the fourth, fifth, and sixth, the difference is not so perceptible."

"These statistics of Dr. Bemiss, already referred to, were carefully collected, mostly by medical men, from almost every State in the Union, and from no extreme point of view; they may be considered, therefore, as a fair and correct representation of the case as it is found in all grades or classes of society. This report gives 580 instances of intermarriage of cousins, resulting in 2,778 children, of which 793 were defective; 117 deaf and dumb; 63 blind; 231 idiotic; 24 insane; 44 epileptic; 189 scrofulous; 53 deformed; and 637 died early.

"The proportion of offspring here reported as defective, diseased, constitutionally impaired in body or mind, is certainly much larger than what would be found in the same number of children taken from the same number of families indiscriminately in the community. This same report embraces a large number of such marriages where there were few children with defective, diseased, or impaired organization; and also some families among them having numerous offspring, very healthy and promising in character. These were instances where the parents had not only good sound constitutions, but temperaments and a physical organization different, so that the parties were well adapted or matched to each other, rendering the union prolific and the progeny comparatively sound."

Dr. Voisin has recently published statistics which go to show that epileptic and idiotic children are no more likely to be descended from parents who were related to each other than from those not related to each other. He investigated the family histories of over 1,000 idiots and epileptics.

WHAT IS LIFE?

This question has been asked for ages, and has been variously answered.

Of the many theories of the ancients in regard to this subject I do not intend to speak.

Within the past few years some attempts have been made to solve the mystery of life by actual scientific investigation.

The facts and theories in regard to the CORRELATION AND CONSERVATION OF FORCES, that have been recently advanced by *Metcalfe, Count Rumford, Grove, Helmholtz, Mayer, Faraday, Liebig, Carpenter*, and others, have started a new method of investigating life.

According to the theory of the *Correlation and Conservation of Force*, "*light, heat, electricity, magnetism, motion*, and chemical affinity are all convertible material affections; assuming either as the cause, one of the others will be the effect. Thus *heat* may be said to *produce electricity*, electricity to produce *heat*; *magnetism* to produce electricity, electricity magnetism; and so of the rest. *We must humbly refer their causation to one omnipresent influence.*"

According to this view, *heat is but a mode of motion*. All these forces with which we are so familiar—light, heat, electricity, magnetism, motion, the vital force of plants, and the nervous force of man—are simply *modes of motion*. They are forms of energy or power. They are all mutually convertible. Mechanical motion may become changed into heat, or into electricity. Electricity is now held to be a subtle motion of the molecules of matter. All of these changes may be reversed. Electricity, magnetism, and heat, as every one knows, can produce motion.

Count Rumford observed that when brass cannon were bored a great quantity of heat was produced. He afterwards found by experiment that in boring under water, the heat produced made the water boil in *two hours and thirty minutes*. Of this experiment Count Rumford says:—

"It would be difficult to describe the surprise and astonishment expressed in the countenance of the bystanders on seeing so large a quantity of water heated, and actually made to boil, without any fire."

"Just fifty years subsequently to the experiment of Rumford,

(according to Prof. E. L. Youmans), Dr. J. P. Joule, of Manchester, England, after a most delicate and elaborate series of experiments, determined that 772 units of force produce one unit of heat; that is, 772 pounds falling through one foot produce sufficient heat to raise one pound of water 1° F. This law is known as the mechanical equivalent of heat."

The law is that a definite *quantity* of any one form produces a *definite* quantity of another. So much heat produces just so much electricity, or so much magnetism, or so much motion, and *vice versa*. If a boy kicks a football, the quantity of force that he uses is exactly represented in the motion given to the ball. If the ball rolls on the ground, the quantity of friction that it meets with is exactly represented in the amount of stoppage that it gives to the ball. A thousand familiar illustrations of this law will occur to every one who can comprehend this theory.

This leads us to the second part of this theory, namely, *that no force is ever annihilated*. Light passes into heat, heat passes into motion; electricity produces magnetism, and magnetism produces electricity; but amid all these changes no force is ever lost. The form or manifestation is changed, but the quantity remains the same through all time. Our house *is burned up, but it is not annihilated*. It passes away in the form of smoke, gases, and watery vapor and ashes. The larger the house, and the more combustible the material, the greater the quantity of smoke, or gases, or vapor, or ashes.

A plant or animal dies, but it is not annihilated. It passes into dust, and gases, and vapor; is resolved into its original chemical elements, or into something that represents them. Strictly speaking there is no such thing as death. Death of plants or of animals is simply a change of condition. Thus the teachings of religion and the conclusions of science beautifully harmonize.

The nervous force may possibly be correlated to the other forces. Give to any man a definite quantity and quality of brain, and there will be a definite and corresponding quantity and quality of thought. On this subject I have spoken in more detail in the *Physiology of the Brain*.

This law of the Correlation and Conservation of Forces governs everything. It embraces the universe. It directs the movements of the stars, and holds in ordered activity the mighty procession of the firmament.

Prof. Huxley, in a recently published pamphlet entitled "*The Physical Basis of Life*," has advanced the startling idea that

what is termed "Protoplasm" is the basis of all life in plants, in animals, and in men.

This protoplasm contains four elements—carbon, hydrogen, oxygen, and nitrogen—in very complex union. I quote as follows:—

"All work implies waste, and the work of life results, directly or indirectly, in the waste of protoplasm. Every word uttered by a speaker costs him some physical loss; and in the strictest sense, he burns that others may have light—so much eloquence, so much of his body resolved into carbonic acid, water, and urea. It is clear that this process of expenditure cannot go on forever. But, happily, the protoplasmic *peau de chagrin* differs from Balzac's in its capacity of being repaired, and brought back to its full size, after every exertion. For example, this present lecture, whatever its intellectual worth to you, has a certain physical value to me, which is, conceivably, expressible by the number of grains of protoplasm and other bodily substance wasted in maintaining my vital processes during its delivery. My *peau de chagrin* will be distinctly smaller at the end of the discourse than it was at the beginning. By and by I shall probably have recourse to the substance commonly called mutton, for the purpose of stretching it back to its original size. Now this mutton was once the living protoplasm, more or less modified, of another animal—a sheep. As I shall eat it, it is the same matter altered not only by death, but by exposure to sundry artificial operations in the process of cooking. But these changes, whatever be their extent, have not rendered it incompetent to resume its old functions as matter of life. A singular inward laboratory, which I possess, will dissolve a certain portion of the modified protoplasm, the solution so formed will pass into my veins; and the subtle influences to which it will then be subjected will convert the dead protoplasm into living protoplasm, and transubstantiate sheep into man. Nor is this all. If digestion were a thing to be trifled with, I might sup upon lobster, and the matter of life of the crustacean would undergo the same wonderful metamorphosis into humanity. And were I to return to my own place by sea, and undergo shipwreck, the crustacea might, and probably would, return the compliment, and demonstrate our common nature by turning my protoplasm into living lobster. Or, if nothing better were to be had, I might supply my wants with mere bread, and I should find the protoplasm of the wheat plant to be convertible into man, with no more trouble than that of the sheep, and with far less, I fancy, than that of the lobster. Hence, it appears to be a matter of no great moment what animal or what plant I lay under

contribution for protoplasm, and the fact speaks volumes for the general identity of that substance in all living beings. I share this catholicity of assimilation with other animals, all of which, so far as we know, could thrive equally well on the protoplasm of any of their fellows, or of any plant; but here the assimilative powers of the animal world cease."

SCHOOLS AND SYSTEMS OF MEDICINE.

Medicine, like theology, has been divided into numerous sects or schools. The schools of medicine, like the sects of theology, have multiplied with the advance of civilization. The reason of this is quite apparent. In barbarous and semi-civilized countries there is comparatively little thought or *liberty* of thought. Even those who have a talent for thinking, inventing, discovering, pioneering, are kept down by the tyranny of law or custom, and dare not advance new views. The consequence is that in all such countries there is apt to be a uniform faith in medical science as in religion, to which all without question give allegiance. Even in enlightened Europe and America, liberty of thought is a plant of very recent growth.

Even the last quarter of a century has witnessed angry persecutions for scientific or religious opinion in the most enlightened portions of the globe, and on both sides of the Atlantic.

Political liberty, religious liberty, literary liberty, scientific liberty, all are children of our modern civilization, but of these political liberty was the first-born. Scientific liberty is the youngest child of all, and it is now in its infancy. Within my own memory some of the noblest benefactors of science have been derided and persecuted for holding and advancing different scientific views from those which were generally received by their neighbors. Some of the most honored leaders of scientific thought of our time—names that are known and loved in both hemispheres—have fought their way to success inch by inch, against opposition that would have crushed men of merely ordinary power.

I believe that very much and very valuable scientific truth has been lost to the world because its discoverers dared not risk their lives or their reputations by revealing their treasures.

On the other hand, as humanity progresses, as men become more

thoughtful and more liberal, sects and schools multiply. It is as impossible for all men to think alike on matters of opinion, as it is for all men to be born alike. So long as men are born with different capacities and tastes, just so long will they think differently on all matters of opinion, provided they have the liberty of so doing.

There are certain facts in science which are demonstrated, concerning which there can be no difference of opinion among intelligent men; but there is much in science, and very much in practical science, especially in therapeutics, or the cure of disease, that can never be absolutely settled, that must remain a matter of opinion.

Accordingly we find that ever since men have enjoyed the luxury of thinking and talking as they pleased on matters of science, schools in medicine have multiplied with great rapidity.

They have particularly flourished in America, because this is a land of liberty.

These "schools" or "pathies" have received various names, some of them given to them by their friends and others by their enemies.

Among these names I may mention "*Old School*," "*New School*," "*Eclectics*," "*Allopathists*," "*Homœopathists*," "*Hydro-pathists*," "*Thompsonians*," "*Electricians*," "*Mesmerizers*," "*Rubbers*," "*Kneaders*," "*Pounders*."

In regard to all these systems of treatment, I may remark:

1. *Many of them—I will not say all—have some basis of truth.* It is true that water is a most excellent remedy, and all wise physicians of our day use and recommend it. It is true that small doses of medicine are oftentimes less injurious and more beneficial than large doses, and all wise physicians of our day act accordingly. It is true that "herbs" are sometimes more efficacious than minerals, and all wise physicians of our day recommend and use herbs whenever they may be indicated. It is true that there is healing virtue of the most wonderful character in electricity; in animal magnetism, so-called; in the muscular exercise that comes from systematic rubbing, kneading, and pounding; and the wise physicians of our day are beginning to avail themselves of the advantages of these methods of treatment. Again, it is just as true that the minerals, the large doses, the purging, and the bleeding, and the blistering of what is commonly called the "*Old School*," are sometimes of service in the treatment of certain diseases; and the wise physician of our time does not hesitate to use even these unpopular methods of treatment in those cases

where they offer a better chance of helping the patient than any other known methods.

2. *All of these systems have suffered from the extreme views and practices of their disciples.*

It is *not* true that water is a specific for all diseases; and no wise physician believes that it is, or confines himself to that method of treatment for all diseases. It is *not* true that minute or small doses of medicine are always or usually more efficacious than large doses, and no wise physician of any school restricts himself to such a system of medication. It is not true that "herbs" are generally more potent than minerals, or that they are necessarily less injurious than minerals; *for the most terrible poisons in the world are vegetable poisons*, and no wise physician confines himself to treatment by herbs alone.

It is *not* true that electricity—mighty an agent as it is—will cure every disease from which the world suffers, and no wise physician uses it to the exclusion of other remedies.

It is *not* true that *rubbing, kneading, and pounding* will renew the youth or cure incurable maladies; and no wise physician recommends them indiscriminately for everything.

Again, it is *not* true that minerals, active purging, blistering, and bleeding are called for in all or even in the majority of the diseases of our time; and no wise physician, who appreciates and understands the change that has taken place in the types of diseases, and the wonderful advance that has been made in their treatment, now uses these so-called *heroic* methods as much as was formerly the custom even of our leading practitioners.

3. *Most of these schools, in spite of the errors and extremes, and even crimes, of their followers, have been of more or less service to the cause of medical science.*

Opposition, discussion, and quarrels arouse the mind to unwonted activity, and make us at once more energetic and more cautious. With all their errors, blunderings, enmities, despisings, backbitings, narrowness, prejudices, and ignorance, the different schools have aided the general cause of medical science, oftentimes unconsciously to themselves.

The world is even now crowded with empirics, charlatans, and with narrow, prejudiced, ignorant pretenders to science; and yet, in spite of all, medical science has progressed and progresses very rapidly. In spite of all, or by means of all, diseases are now treated much more successfully than formerly. Patients suffer less, and live longer. Many chronic diseases especially, that were formerly neglected, are now relieved and cured. For some of this progress

our educated physicians, our leaders in science, are indebted to their enemies as well as to their own efforts.

4. *Patients make a serious mistake who desert a wise and judicious and advanced physician for any special "sect," or "school," or "pathy," or "ism," as such.*

The simple truth is, that the science of healing disease is not, and in the nature of things never can be a mathematical science, and is chiefly made up of experience. *Happy hits* are sometimes made by special pathies or isms, and will be until the end of time; *but in the long run the best results, the surest cures, are made by the intelligent, upright, educated, liberal-minded physician, who judiciously avails himself of all means for the treatment of disease that experience has demonstrated to be useful.*

Patients should know the fact—which among physicians is well understood—that *in all these special schools, which are so rife to-day, their really intelligent followers do not confine themselves to the theories on which their systems profess to be founded, and only adopt the name as a matter of policy.*

I admit that in all these modern schools there are even yet to be found men so narrow, so ignorant, or so criminally prejudiced as to believe implicitly that the science of medicine must live and die with the special theories on which they found their practice.

Of late years great use has been made of the word "*eclectic*," and many have been charmed and misled by it. I say nothing for and nothing against the eclectic school, when I assert that every physician of our day who is worthy of his profession is in the true sense of the word *eclectic*.

The terms "old school," "allopathic," &c., are of modern growth entirely. They have never been adopted by any respectable body of physicians anywhere, but have been used by the people mostly to designate those who *are not* homœopathists, or hydropathists, or "Thompsonians," or of some other special sect. It is sufficient to say that these terms—allopathists, "old school," &c.—entirely misrepresent the character of the great majority of the really liberal, progressive physicians to whom they are applied.

Very few understand the real merits of the controversy between the homœopathists and the regular school of medicine.

The distinctive principles of Hahnemann were these three:

First.—That "*like cures like*;" *secondly*, That the curative power of medicines is increased by minute subdivision; and, *thirdly*, That infinitesimal doses are preferable.

The regular school of medicine asserts that none of these three points have been demonstrated ; and, even if they were all demonstrated, they would not displace other facts and principles of medical practice, and should not therefore be made the basis of an *exclusive* system.

The causes of the temporary success of homœopathy are these :

First.—The fact of its novelty. Whatever is new and believed in, excites the emotions and cures, subjectively, through the imagination of the patient. (See *Action of Mind on Body*.)

Secondly. Homœopathic medicines are pleasant and easy to take, especially for children, as contrasted with the nauseous doses formerly given by the regular school.

Thirdly.—Some of the homœopathic remedies are of positive efficacy in many diseases. It is in harmony with what we know of the laws of the human system, as well as of nature in general, that very minute doses of powerful medicines may have, when frequently repeated, very important curative effects.

Fourthly.—The majority of the more intelligent of homœopathic practitioners, especially in recent times, do not restrict their practice to the principles of Hahnemann, *but use the same remedies in the same doses as the physicians of the regular school. These four causes are, as it seems to me, sufficient to fully account for the success that the homœopathic school has achieved.*

During the last few years, homœopathy has evidently been on the decline. The causes for this decline are these :

First.—The increase of intelligence, and especially the development of the *scientific spirit* in society.

Secondly.—All that is really new and true and practically useful in homœopathy is being adopted by the regular school. *Medicines are made more palatable and attractive*, and where experience justifies, smaller doses are given.

Thirdly.—The best of the homœopathic practitioners have deserted the principles of the founder of that school. In regard to homœopathy, also, these two facts are to be noted :

First.—That from the time of Hahnemann until now, all the advances of medical science, in all its branches, even including therapeutics, have been made by the regular school of physicians.

Secondly.—Comparative observations of the relative merits of different schools of medicine, made in hospitals, or during the occurrence of great epidemics, like cholera or yellow fever, are scientifically of little value, for the reason that numberless sources of error from chance, coincidences, hygiene, and mental therapeutics, come in to destroy the value of such experiments.

SURGICAL ACCIDENTS AND EMERGENCIES.

THE IMPORTANCE OF SOME SURGICAL KNOWLEDGE TO EVERY PERSON.

THE following directions are not designed to induce the public to usurp the province of the regular surgeon, but merely to put our readers in possession of a few broad principles, and a certain portion of the modes of operation, by which they can calmly face the danger of an accident that involves the question of life or death in a fellow-being, *grapple with it until the arrival of a surgeon, and, when life can be preserved, to preserve it!* No family is proof against accidents. You may, perhaps, be called on, almost at any instant, to listen to the painful intelligence that a calamity of a threatening nature has happened to a member of your own household. Suppose such an one to have severed the main artery of the thigh—an accident entailing certain death, unless aid be immediately rendered—and no surgeon within some miles. The blood is gushing out in torrents from the wound, or he is already at the point of exhaustion! You would go calmly and scientifically to his relief, quiet the tumultuous grief of his surrounding friends, while dexterously applying a bandage which you would instantly construct of your pocket-handkerchief, and coolly put aside the arm of death!

There are accidents of a very common character which require surgical assistance, but which do not threaten life; such, for example, are fractures and dislocations. But even here assistance cannot be obtained too soon; for after the utmost and permanent contraction of the surrounding muscles, which generally takes place in about three-quarters or even half an hour, the reduction is effected with the extremest difficulty, and with inconceivable suffering to the patient; while, accomplished in the first moments after the accident, the adjustment of the displaced parts is comparatively easy, and is accompanied with very little pain. In short, the surgical cases of which we treat are those in which relief may be administered in the first moments, which are the most precious; and that, too, with as much facility, and with as much efficacy, in almost every instance, as if a surgeon were actually present.

Sea-captains are obliged to know something of surgery. What I shall hereafter say concerning fractures and dislocations will be designed chiefly for them, and for those who like them are liable

to meet with serious accidents in places where no physician can be procured.

OF THE MEANS OF ARRESTING A FLOW OF BLOOD.

Whenever an accident occurs, wherein the loss of blood is liable to expose the wounded person more or less immediately to danger, the hemorrhage, or flow of blood, may be always suspended by *applying one or more fingers, according to the extent of the injury, upon the place whence the blood issues, while the other more important means are being prepared.*

These consist of any soft substances which are capable of being rolled up or moulded into the form of a plug, and are to be applied directly upon the open vessel, so as completely to fill up and cover the wound; for this purpose recourse may be had to sponge, German tinder, puff-ball, spiders' web, moistened paper, tow, lint, old and soft linen, wool, or, if in the country, and at a distance from any habitation, even fine moss. But whenever it can be obtained, the preference should be given to sponge, as it can be more easily insinuated into the wound, the interstices of which it fills completely up, by reason of its peculiar structure and its elasticity.

But in order to impart the greatest efficacy to the means just recommended, the clots of blood, if there are any, should be removed, and the wound washed with cold water, in order that the place from which the blood issues may be exposed as completely as possible; the point of the plug ought then to be placed directly upon the vessel, and not upon the clot. The cleansing of the wound alone will often cause the flowing of the blood to cease. The substances thus wedged in should be maintained in their situation by a neckerchief or a pocket-handkerchief, folded in the form of a cravat, a common band, or even a garter. If the means already pointed out should be insufficient to suspend the flow of blood, the whole application should be removed, and the pressure of the finger alone relied upon, until the surgeon, or a person acquainted with the nature and treatment of such accidents, can be called in. The wounded person could manage this himself in case of need.

The pressure of the fingers upon the same place during several hours would suffice to arrest the most considerable hemorrhage; but as this continued pressing, if confided to one person, would become too painful to be long endured, two or three persons should be employed to aid alternately.

If, however, it should be found necessary, from the great depth or extent of the wound, to have the powers of restraining the hemor-

Plate G.



GERANIUM. *Cranhills.*



GINGER ROOT.—*Zingiberis Radix.*



BITTER SWEET. *Dulcamara.*



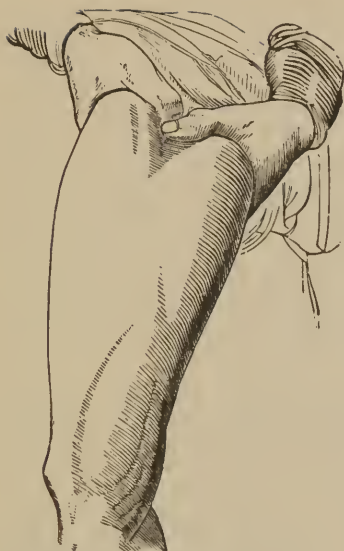
CASTOR OIL.—*Oleum Ricini.*



COLTSFOOT. *Farfara Tussilago.*



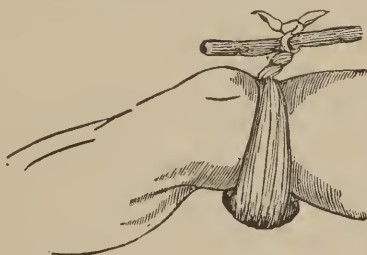
HELLEBORE. *Helleboris Niger.*



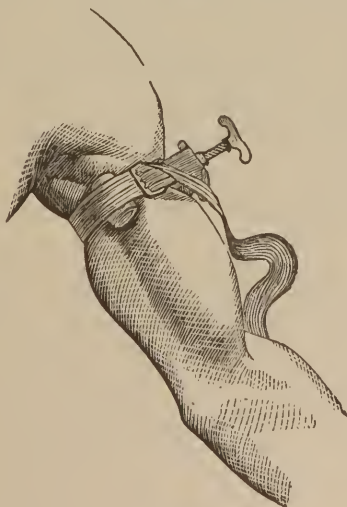
COMPRESSING ARTERY OF LEG TO STOP BLEEDING.



COMPRESSING THE ARTERY OF ARM TO STOP BLEEDING.



STOPPING BLEEDING OF LEG BY TWISTED HANDKERCHIEF.



STOPPING BLEEDING BY APPLICATION OF A TOURNIQUET.

rhage under still more complete control, a tourniquet should be applied to the limb. When this instrument cannot be obtained, (which is most likely to be the case,) it may be readily and efficaciously replaced by the following means, namely, a handkerchief folded in the form of a cravat, to each end of which is to be fastened a band or garter, should be bound tightly round the upper part of the thigh or arm, care being taken to apply previously along the inner side of the limb, immediately beneath the bandage, a handkerchief folded several times over, or a piece of linen doubled backwards and forwards of sufficient thickness to press upon the principal vessel which runs along this part, and which may be easily felt by its pulsation or beats.

In the majority of cases, and particularly when the wounded person is not very fleshy, the above method of exerting compression upon the main artery would alone suffice; but otherwise, a substitute for the tourniquet, not less simple, more expeditive, and, on the whole, much better, may be formed from a cravat, in the middle of which is to be made a double knot. This knot is then to be applied upon the course of the main vessel which it is necessary to compress, while the ends of the cravat are carried, one before and the other behind the limb, to its outer side, from whence, after crossing, they are to be returned over the knot and effectually secured, either upon the front or back part of the limb, by means of pins, or on the opposite side by a knot or bow. A powerful compression may be also effected by applying the ends of the fingers upon the part where the pulsation of the main artery is felt.*

The best means is to tie or twist the bleeding vessel itself just above the part which is open,—the course which is generally pursued by surgeons, and which is not a very difficult thing to perform; but if, from timidity or otherwise, this be not practicable, nothing more can be done than to employ the means just pointed out, which will effectually suspend the flow of blood, until a surgeon can be procured. It may not be altogether useless to observe, before proceeding further, that when, after the common operation of bleeding in

* The tourniquet is used to produce so powerful a compression upon a severed artery, or upon any wound accompanied by alarming hemorrhage, that the blood shall be restrained by mere mechanical force. A very simple means of effecting this object is as follows. Suppose, for example, that the large artery of the thigh has been cut, by which death will be produced in a few minutes, unless the flow of blood be stopped. Take a common pocket-handkerchief, and pass it around the thigh above the wound, previously inserting a strong stick between the outside of the limb and the handkerchief. Let the latter be drawn tight, and firmly knotted. Then turn the stick, which will operate as a lever, and will make the bandage press upon the artery with almost any force desirable. Many lives have been lost which might have been saved by this application, and which almost any one can command at any time.

the arm, and the surgeon has left the patient, the blood should gush out afresh,—which not unusually happens—the bandage should be removed from the arm, the wound washed, a fresh pledget placed upon the orifice, and the ligature re-applied in a similar manner; that is to say, in the form of the figure eight, the inter-crossing of it being of course made to correspond to the pledget; the patient should then be told to keep the arm quite still, and in a half bent position. Sometimes a completely bent position will, of itself, suffice to arrest the flow of blood.

Leech bites, especially in children and very delicate individuals, will often give rise to a loss of blood difficult to suppress. If the means ordinarily employed, fail to effect the desired end, recourse may be had to the following methods. The skin is to be gently pinched up, about the spot where the blood is flowing freely, and the part itself covered with finely powdered charcoal or powdered alum, or, better still, a morsel of sponge or lint soaked with a spirituous liquor. Surgeons sometimes employ a small needle, which is run through the cuticle, or outer skin, immediately above the orifice; this is instantly and effectually closed, and the flow of blood quickly suspended.

A most essential thing to be observed is, to keep the wounded person perfectly quiet, in order that whatever may have been applied, may not become displaced. He should never be lost sight of, in order that if the hemorrhage return, instant assistance may be offered him; but unless such a circumstance take place, nothing should be touched, for fear of the slightest alteration occasioning the closed vessel to re-open. Attention, however, should be paid to the bandage, so that if it should be found at all loose it may be gently tightened; or that if on the contrary, it should prove too tight, so as to occasion pain or swelling of the parts, it may be relaxed. *In no case should any exciting food or drink be given to the patient; he should be allowed but little aliment, and the use for drink of nothing but pure water.*

ON THE FIRST ASSISTANCE TO BE RENDERED IN CASES OF DANGEROUS ACCIDENTS.

In the event of a fall, or of a severe blow, or of any considerable violence which may have given rise to accidents of a serious character, or at least to those which are supposed to be so, every thing depends, in most instances, upon the *first attentions* afforded to the injured person; their aim should be to relieve his sufferings, and facilitate his re-establishment. On some occasions they will even *rescue* life and preserve his existence.

But before proceeding upon what ought to be done, a few remarks may be offered upon what is essential to be avoided.

1st. On no account let beer, wine, ardent spirits, or spirits and water be given him in the mistaken view of reviving him, of doing him good, or affording him strength. It is exceedingly rare that such means are useful; and in the vast majority of cases they are positively injurious, not to say highly dangerous. Pure water alone, if he asks for drink, should be offered him.

2d. The patient should not be surrounded by a number of persons, for fear that, in the disorder and confusion inseparable from a crowd, his case may be aggravated, some fatal movement be occasioned, or some misunderstanding arise about what should be done or what given, while the employment of things which are really useful may be neglected or prevented. Two or three persons are quite sufficient to be about him; and more particularly if the chamber be small and close, and the weather warm.

3d. The greatest caution should be used, that he be not shaken or inconsiderately removed before it has been ascertained whether such removal would not be injurious, or, at least, whether it would not be preferable to tender him the attentions his situation requires on the spot, in allowing him to remain quiet. The first thing to be done is to place him in a good position; one that will enable him to breathe freely; his nose and mouth should be cleared of any dirt or blood that might impede respiration; his limbs also should be placed in a favorable direction, in order that if there should exist a fracture, this might be less menacing by being less complicated; his dress should be attended to in order that nothing tight should press about his neck, body or limbs. An examination must be made to ascertain if there is any loss of blood, and from whence this hemorrhage arises, to the end that if it be considerable it may be restrained by the means which we have previously indicated. If not considerable, the flow of blood should not be suppressed, but encouraged by the use of a sponge and warm water, for it is well known that blood-letting is generally necessary in cases of this character, as it tends to ward off the most serious consequences of an injury, and that therefore a moderate loss of blood advantageously replaces that which on other occasions must be drawn by leeches or the lancet. When these first cares have been devoted to the sufferer, the good sense of his attendants will teach them not to expose him to the cold, to an undue degree of heat, or to the wet, as also to call in immediately a surgeon. But in very grave cases it would be advisable to send for the two nearest; for the presence of both would not be too much unde-

such circumstances, while, on the other hand, there would be an extra chance in favor of enlightened aid.

If the protracted absence of the medical men, or the great distance from their dwellings, should give rise to serious apprehensions for the safety of the sufferer, no hesitation should be made in sending for a good nurse, or some one who may have had an opportunity of frequently witnessing cases of accident, and the usual methods of treatment of such cases; and then, perhaps, it would be advisable, after taking off, as well as can be done, the patient's dress, to apply leeches, fomentations, or emollient poultices upon the seat of the injury, which is generally swollen and painful. But as these means, especially the two first, are not always easy, nor always requisite, it will be enough, in the first instance, to have recourse to cold water constantly applied to the seat of the injuries by means of soft rags upon the cut, lacerated, or contused parts.

Water, simple as it may appear as an application, is, in the opinion of the greatest surgeons of all nations, the very best of remedies, and renders totally superfluous the application of the balsams, ointments, and other external remedies which are ordinarily employed. Some persons are led to expect a miraculous good from the addition of certain articles to the water, but let them rest assured, that so far from increasing its efficacy, they are far more likely to render it irritating and injurious.

Let attention be paid to the temperature of the chamber, that it be neither too warm nor too cold, and that there be no more persons present than are absolutely necessary to the duties required by the situation of the sufferer. The occasional visit of a friend, which is always better avoided, should be of short duration, and more particularly if it should appear to cause much excitement to the patient, or to trouble him.

On no account should heating liquids be administered; a little lemon whey, or better still, lemonade or barley water, should be preferred; nothing should be given to the patient to eat; (the strictest abstinence is *rigorously* to be observed and persisted in for the first few days;) the bowels are to be gently opened by means of injections; (an ounce or an ounce and a half of salts in a little thin gruel;) and the wet rags frequently changed, attention being paid to those which are saturated with blood, for the reasons already mentioned. A good nurse will always preserve her presence of mind, and that calm which is so necessary to assure the patient. She will endeavor by all means to restrain the sobbings and lamentations of

assistants, and, in short, babbling and noise of all kinds, which not only tend to fatigue the patient, but to trouble that repose of body and mind of which he stands so eminently in need.

In circumstances such as these, and when there exists general and very serious contusions, a warm bath is particularly recommendable; and where it is possible to procure one, it is advisable to keep the patient in it an hour or more. But when this is difficult to obtain, or when it would be necessary to wait a considerable time, a sheet, or what is still better, a blanket, soaked in warm water, and frequently renewed, may be advantageously substituted for it.

It is the same with the freezing body as with fruits when nipped by the frost, and which become almost immediately rotten, if care be not taken to thaw them first in cold water; and experience, moreover, teaches us the suffering we expose ourselves to, when being extremely cold we approach our hands too near the stove. If the individual's feet who has received an injury are extremely cold, hot flannels may be applied to them, or otherwise a bottle of hot water. A cup of tea may be administered, or a little gruel, to which may be added two or three table-spoonsful of wine, or a tea-spoonful or two of spirits. If he should have been in liquor, or should have the stomach overcharged with food, vomiting should be excited by tickling the fauces or back part of the mouth with a feather. This operation, or rather the evacuation which results from it, is of the highest utility, and prevents, or at all events calms, many very bad symptoms.

If the individual is insensible, and if the means just pointed out fail to recover him, or if from the exhaustion and debility occasioned by the loss of blood he is in a fainting state, means should be employed to re-animate him, such as are usual in similar states arising from ordinary causes; namely, the application of hot flannels on the pit of the stomach; rubbing the limbs with a brush or a hard towel; strong vinegar or spirits applied to the mouth, to the temples, or introduced into the nostrils by means of a feather; a clyster (or injection to the bowels) composed of one half water and the other half vinegar; sudden aspersions of cold water upon the face or the region of the heart, taking care afterwards to rub the parts dry with hot towels; in short, by currents of fresh air. But the best and most energetic of all these means is, without contradiction, *boiling water*. To use this conveniently and effectually, it must be brought alongside the patient, and a metallic body plunged into it, which is then to be carried alternately and in the following manner over the different parts about to be pointed out.

The bowl of a spoon or a hammer are as good as any thing for this purpose, and are extremely convenient. The instrument must

be plunged into boiling water, and placed with rapidity upon the sole of one of the feet. After some instants it must be applied to the sole of the other foot; then successively upon the neck, the pit of the stomach, the calves, along the spine of the back, and upon various parts of the head; the application being pursued in this manner until the patient returns to himself, or until the surgeon arrives, who will prescribe other remedies.

The application of the hot iron need rarely be continued beyond one second upon each particular part; that is to say, it should be made to touch the skin but lightly; although in some serious cases it will be found necessary to allow the instrument to remain somewhat longer in contact with the part which it is considered necessary to irritate, in order that a stronger and more lasting impression may be produced.

Should there exist reasons for managing with still more control the delicate susceptibility of the patient, a sheet of paper or a morsel of linen rag may be interposed between the skin and the instrument; but then the latter must be more frequently applied, and allowed to remain longer upon the part.

The very slight and circumscribed burns thus occasioned, of an inch or an inch and a half in extent, are in no respect dangerous, and are unattended with any inconvenience; but, renewed with sufficient frequency, they offer the most powerful agent medicine possesses for awakening sensibility, and reviving the spark of life about to become extinguished.

With this view it is that the method just described is recommended, it being a means so simple and so much within the reach of ordinary persons; it is one which imitates, in short, the happy and salutary effect of mustard poultices, blisters, and the moxa; while it is unattended by the unpleasantness of all those applications.

The moxa is the application of a burning substance to the surface of the body, to act as a counter-irritant in a variety of diseases. The operation for the moxa is usually performed thus:—A piece of German tinder, of the size of a shilling, is dipped in camphorated spirits of wine, and, after being inflamed at a candle, is held, by means of an instrument, in contact with the skin, which becomes burnt, and afterwards forms an eschar.

OF THE FIRST ATTENTIONS GENERALLY REQUIRED BY WOUNDS.

The first thing to be done is to wash or gently cleanse the wounds which may happen to be covered with earth, clots of blood, or other foreign bodies. If the blood flows abundantly or disagreeably the hemorrhage may be stopped by the means already

mentioned; and in general it suffices to apply upon the injured part a bit of soft linen, moistened with cold water, and maintained in place by a handkerchief. Should the wound be produced by a slug or ball, or should it be lacerated and considerably contused, nothing remains to be done but to sprinkle the dressing from time to time with cold water.

This is all that it would be necessary to do, if it should be a case of burn.

But if it should be a cut or incised wound, whether from a sabre, hatchet, knife, scythe, or other cutting instrument, there is this precaution always to be taken; namely, to bring into exact contact the edges of the wound, in order that they may unite, and the cure be accelerated. As to the after treatment, it is strictly the affair of a regular surgeon, but every one may be taught to imitate it, by placing the injured limb in such a position that the wound gape as little as possible. The good sense of the attendants, and some little instruction, will suffice to put each in a condition to effect this important object. Thus, the fingers and hand must be closed as when the fist is clenched, if the wound be within, and kept maintained in that position; if, on the contrary, the wound be on the opposite side, the hand must be kept upon the stretch. If the wound be on the bend of the knee or of the elbow, the leg or arm must be bent; or, on the contrary, extended, if it occur upon the knee or elbow themselves.

When the wound is on the neck, the head must be brought to incline toward the side upon which the wound exists.

As a general rule, that position is to be sought for, which will diminish to the greatest degree the extent of the wound, and must be maintained in the best manner possible, after the edges have been brought with great exactitude together.

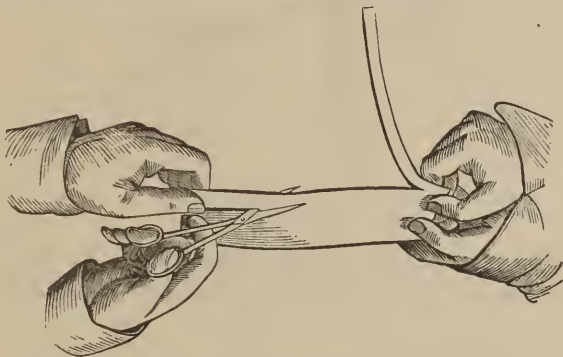
Such will be the object of the surgeon upon his arrival; but before his presence can be procured, and there is no possibility of constructing the appropriate bandage, the hands of an attendant should be made to supply its deficiency. It is more especially when wounds occur in the neighborhood of the joints, or when they are accompanied by a division of the bones or sinews, (tendons,) that the edges of the wound should be immediately brought into contact, and maintained so by the means just recommended.

What has been already said of the regimen to be imposed on the patient, and of those attentions which wounds in general demand, is not less applicable to the injuries lastly spoken of, and must be rigorously observed.

Every family ought to be in possession of a large piece of

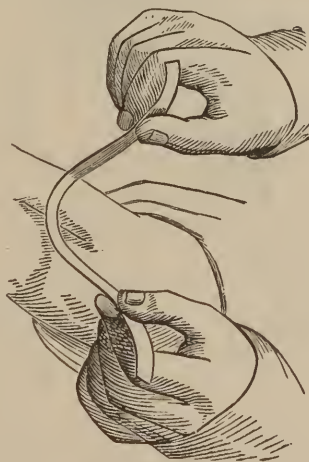
adhesive plaster; as to linen rag, it will in general be readily found. The general directions given above for the first attentions to be bestowed upon a wound, suffice for every case; as to the application of the dressings, the following rules will be found equally to hold good.

There are circumstances in which surgical aid cannot be procured. In such cases persons should be able to conduct the after-treatment



CUTTING ADHESIVE STRIPS.

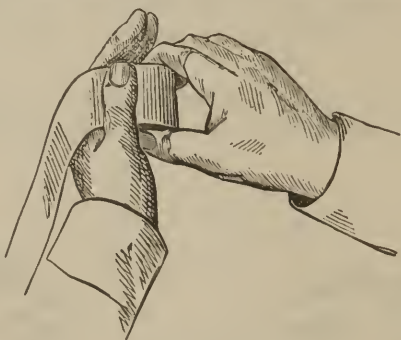
throughout. We will suppose a common incised wound, from a sharp instrument, in which no large vessel is implicated. The first thing to be done is to cleanse it. The next is to cut a number of



APPLYING ADHESIVE STRIPS TO WOUNDS.

strips of adhesive plaster, and prepare some soft linen rag for compresses or pledgets. When these have been prepared, the muscles of the injured parts must be brought into relaxation, the edges of the

wound brought into contact, and strips of adhesive plaster, previously warmed, applied so as effectually to maintain them thus. These strips



ROLLING A BANDAGE.

should be placed at distances apart, varying from half an inch to an inch, according to the extent of the wound, so as to allow of the exuda-



BANDAGING THE LEG.

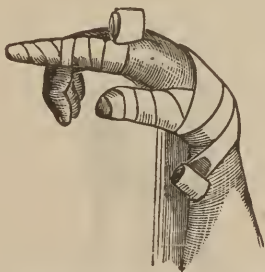
tion of fluids in the progress of the cure. A light compress or pledget should then be laid over the injury, and a bandage applied

to keep the whole in place, and support the action of the sticking plaster. *The bandage may always be constructed by means of*



BANDAGING THE LEG.

a handkerchief, or a piece of linen of the same form, folded to suit the nature of the accident, or the part upon which it is to be applied.



BANDAGE APPLIED TO FINGER AND HAND.

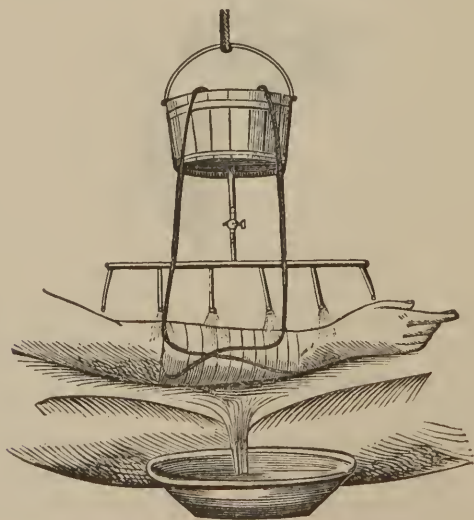
After the wound has been dressed and the bandage applied, which should always be done rather lightly, to guard against subsequent inflammation, the sufferer should be compelled to observe perfect repose. The process of healing will then instantly commence; but should there be too much action in the parts—that is to say, should inflammation arise and the parts swell—the bandage should be loosened and cold water constantly applied, which will soon restore the parts to a healthy state. Under common circumstances, the first dressing should remain until about the fourth day, when it is to be changed in the following manner. 1st. The *bandage* is carefully to be lifted off. 2dly. The *compresses*, which generally adhere, and

require the application for some time of warm water to detach them easily. 3dly. The *plasters*, the ends of which should be first lifted up ; and then the person officiating, seizing them with his right hand (while with the left he presses gently the thumb on one and the fingers on the other side of the wound, to prevent the uniting edges



BANDAGES FOR HEAD.

from being at all disturbed), raises them perpendicularly, but slowly and gradually, never acting upon more than one plaster at a time. The wound ought then to be gently sponged with warm water, and a fresh dressing applied in the way already stated.



IRRIGATING A WOUND.

Although strapping be not *rigorously* required in wounds of this character (the bandage sufficing in a great majority of instances,

Plate 10.



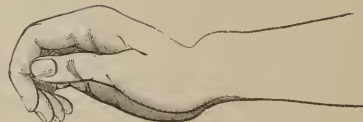
Dislocation of Ankle.



Dislocation of Ankle.



"Silver Fork" Fracture of Wrist



Fracture of Wrist.



Fracture of Leg.

with a compress on each side of the wound), yet it is unquestionably the most secure method, and particularly in hands not often accustomed to treat such accidents.

Torn or lacerated wounds demand nearly the same treatment, but the dressings require to be put on with the utmost gentleness, and the bandage applied still more lightly. When inflammation comes on the wounded limb may be cooled by water, in the manner represented in the cut.

OF FRACTURES.

Although the bones are almost insensible to pain when in a sound state, yet when they are fractured the slightest motion of the fractured extremities is attended with acute suffering. This has the effect of securing repose and quietude, without which the process of recovery would be prevented, and an exact reunion of the broken part could not be accomplished. The irritation produced has also the effect of exciting the healthy action of the nutritive vessels of the part, causing them to pour out the soft substance technically called *callus*, which, when fractured parts are in an exact state of adaptation, glues them, as it were, together. This union in the course of a few weeks is consolidated, and the limb is again fitted for the performance of its functions. In ordinary cases of fracture, nature sets up no greater action than is necessary for the reparation of the injury; if the bones be properly set, and kept in their natural position by the judicious use of splints and bandages, the limb being retained in a suitable posture, little or no pain or inflammation will occur. We shall now proceed to notice the methods of treating the fractures which are of the most frequent occurrence.

Simple fractures may be easily cured by any one possessed of common sense and a gentle hand. Yet from ignorance of a few simple rules, the patient's friends are often unable to afford him any relief, the future usefulness of the limb is impaired, and permanent deformity is frequently the result. In more complicated cases, where the bones are crushed, and the soft parts bruised and lacerated, or the fractured extremities of the bones protrude through the skin, all the skill of the experienced surgeon is required to restore the injured parts. Yet the following hints, for the management of simple fractures, may be of service when the aid of the surgeon cannot be obtained.

FRACTURES OF THE THIGH-BONE.

The bone is generally broken about the middle, or towards the lower extremity; the fracture is often transverse, but more frequently oblique.

The patient experiences severe pain at the moment of the accident, and is unable to move the limb; the foot is turned outwards from the weight of the limb; and the thigh is more or less shortened, according to the degree of obliquity of the fracture, the lower end of the bone being almost invariably drawn behind the upper one, which remains stationary; thus the ends of the fracture ride over each other. If the bone be broken directly across, there can be no shortening of the limb, unless the upper end of the fracture ride over the lower, which rarely happens.

Dr. H. G. Davis states, in his work "Conservative Surgery," that in case of fracture, in moving the patient, or, if he has fallen, in taking him up, "continued extension" should be applied, that is, a continuous pulling; this can be done with the hands. This pulling prevents the rough ends of the bone fractured from piercing into and wounding the soft parts; it also prevents pain.

The first thing to be done is to prepare a long splint, which may be made of a piece of firm deal-board, of a degree of thickness sufficient to prevent it from being bent, or easily broken. It must be long enough to extend from a little above the false ribs to three or four inches beyond the sole of the foot, and should decline gradually in breadth, so that the breadth shall correspond to the dimensions of the limb. At the lower end two deep notches are to be made for the attachment of the bandages, and the upper end is to be perforated by two holes, for the same purpose. The patient having been placed on a smooth and firm bed (a hair mattress is generally preferred), his limb is to be covered with a common bandage or roller, from the toes to near the knee. This is done merely to prevent the leg from swelling, which would otherwise happen from the pressure that must necessarily be made higher up. The operator should now gradually draw out the fractured member, while an assistant keeps the upper part of the thigh firmly fixed until the limb is of the same length and direction with the sound one. The long splint, well padded with proper cushions, in order to prevent the skin from being injured, is then to be applied, and attached to the limb by means of a roller, which is to be passed round both, from above the knee down to the foot, and having been turned round the ankle is to be passed through the notches, so as to be firmly fastened to the end of the splint; the

toot is thus effectually prevented from changing its position. A broad bandage is now to be applied round the lower part of the body, so as to fix the upper extremity of the splint, thence down over the groin, and continued downwards, still involving both the limb and splint, until it reach the bandage first applied. The splint being now firmly attached along the whole length of the limb, we are next to fasten a broad bandage round the lower part of the waist, in order to bind it to the trunk of the body. Next pass a handkerchief or shawl over the groin and buttock, and securing its ends through the holes at the top of the splint. By tightening the handkerchief, or whatever bandage may be employed, we of course extend the limb, and this must be done frequently, in order to preserve it of the proper length. It will be advisable to reapply the bandages twice or thrice in the course of the cure, which generally takes place in about six weeks: but the patient must be careful not to rest his whole weight upon the limb till three months have elapsed, because the osseous substance, by which the ends of the bones are united, is for a long time tender, and might be readily broken again. To prevent the skin from being injured, it will be necessary to pay particular attention in adjusting the cushions about the ankle and at the groin, where the bandage, which passes up between the thighs, must necessarily cause considerable pressure.

FRACTURES OF THE BONES OF THE LEG.

Sometimes the shin bone, or *tibia*, is fractured, while the fibula, which is situated behind and towards the outside of the leg, remains entire. When it occurs near the protuberance below the kneepan, the injury is readily recognized, particularly if the knee be bent, for then the upper part of the broken bone is thrust forwards. Roll a bandage round the limb from the toes upwards. Extend the leg. A splint of wood, hollowed to fit the limb, and long enough to reach from the middle of the thigh to near the heel, is to be placed behind, whilst a pasteboard splint is to be applied on each side. The whole are then to be secured in the usual way by means of a bandage. If the two side splints are of wood, they should be applied by means of a linen splint-wrapper a yard wide, and of sufficient length to cover the splints. The wrapper is to be placed underneath, and the splints rolled up in its longitudinal border, until they reach the limb; if they do not fit properly, we must roll them over again, until they come accurately in contact with the sides of the limb. Wherever two wooden splints are required they may be applied in this manner, which, though a little more troublesome, is decidedly the best. Five bands of tape, or strong linen, two fingers' breadth wide, placed

under the lower splint, are now to be brought round and tied at the outer side of the limb; or a roller may be applied as above directed. Care must be taken to keep the heel sufficiently raised, by placing pads under it.

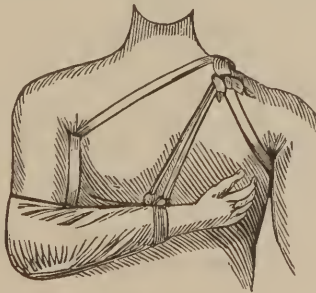
If the shin-bone be broken lower down, the patient loses all power of the limb, and the slightest movement causes great pain, but there is not much deformity. By moving the fingers along the front and sharp edge of the bone, which are only covered by skin, the seat of the fracture may be easily ascertained; or if we grasp both ends of the bone, and move them in opposite directions, the displacement of the pieces may be perceived, and we may also distinguish a grating noise. The treatment here consists in placing a pasteboard splint on the outside of the leg from a little above the knee to the ankle; and another on the inside of the same length, cushions having been interposed between the splints and the leg, to prevent the skin from being injured. The apparatus is then to be secured by five or six flat pieces of tape, which may be easily relaxed or tightened, according to the degree of swelling. The limb is to be placed upon its outer side, with the knee bent upon a pillow. If wooden splints are employed, they should be applied with the wrapper in the manner above described, and oaten chaff cushions or proper pads placed along the limb, to protect the skin.

When both the bones of the leg are broken together, they seldom give way opposite to each other. There may be a distance of several inches between the fractures. This injury causes the foot to be turned out, and the leg to be bent and deformed. The eighteen-tailed bandage, is generally employed in the treatment of this fracture; many surgeons use it in every case of fracture of the extremities. It is made as follows. To a piece of linen three or four inches wide, according to the size of the limb, and as long as the leg, are to be stitched crosswise eighteen strips of the same width, and in length sufficient to make a turn and a half round the limb, from the knee down to the ankle. They are to be stitched so as to cover each other for about two-thirds of their breadth. The lower ones do not require to be so long as the upper, and they should be attached rather obliquely to the middle piece, so as to allow them to fit properly round the limb. In setting the bones, the knee is to be slightly bent, and the leg drawn out so as to bring the ends of the bone in contact. The limb having been carefully raised, a splint extending from above the knee to beyond the ankle, covered with a soft pad, and having over this the eighteen-tailed bandage, is to be placed underneath; the leg is then to be gently lowered until it rests upon the apparatus. But in raising the limb from the bed, the operator must be careful to

keep the upper and lower parts of the bone on the same level, by firmly grasping the limb above and below the fracture, and elevating them together, so that the fractured surfaces may be maintained in apposition. The eighteen-tailed bandage is now to be applied in the following manner. The operator lays hold of the extremity of the lowest band or tail, the opposite one being fixed by an assistant, and passes it obliquely across the leg to the opposite side; he then brings over the end held by the assistant with one hand, while with the other he retains the first firmly in its place, and applies it in the same manner round the limb so as to intersect the first. The tails are to be thus applied in succession from the ankle up to the knee. The ends should always be carried underneath the limb. Another pad of some soft substance is next to be applied over the upper part of the limb, and over that another splint of the same length as the first. Five or six pieces of flat tape or strong linen, which ought in the first instance to be placed under the lower splint, are now to be brought round and tied. The limb should be fixed upon a frame in the form of a double inclined plane, made by nailing the boards together at an obtuse angle, with the addition of a foot board. The splints are to be retained for five or six weeks, the time required for the union of the bones varying according to circumstances. After their removal, the limb should be accustomed to its former functions by degrees; and the patient should be careful not to put much weight upon it for at least two months.

FRACTURE OF THE COLLAR-BONE.

The fracture generally takes place about the middle of the bone and is easily detected, because we can feel the bone along its whole



APPARATUS FOR BROKEN COLLAR-BONE.

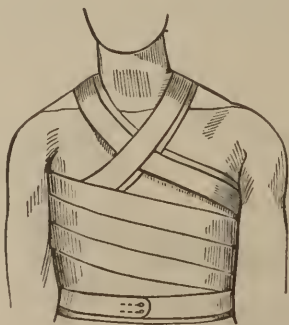
length. The weight of the shoulder and arm makes the outward

portion of the broken bone fall downwards and forwards along with the arm; and thus causes the shoulders to seem narrower, while the piece which is attached to the breast-bone appears raised, without really being so. To place the broken ends of the collar-bone in contact, both shoulders must be pulled strongly backwards, and kept in that position by turning an appropriate bandage round the shoulders. The arm being now placed across the chest, with the fingers pointing to the top of the opposite shoulder, is to be supported and fixed in that position by fastening a broad bandage round the arm and chest, or by rolling a firm pad made of soft material in a shawl and placing it in the arm-pit, which it should be large enough to fill. The shawl is then to be tied over the opposite shoulder, and the ends brought down and secured at the arm-pit of the sound side; cushions or pads being interposed to prevent the knots from injuring the skin. The arm is to be supported and fixed as above directed. No splints or lotions are required, but the part should be examined occasionally, and the bandages adjusted so as to keep the ends of the bone accurately in contact.

It may be necessary to draw blood, and to keep the patient on spare diet for a few days.

FRACTURE OF THE RIBS.

The fracture unites readily, and the only danger to be dreaded is inflammation of the lining membrane of the chest, called the *pleura*; hence it is absolutely necessary to bleed the patient freely, if his countenance becomes anxious, his pulse quick and strong, the



BANDAGE FOR BROKEN RIBS.

breathing short and hurried, with other symptoms indicating the

approach or commencement of plenrity. When one or more ribs are fractured, the patient feels the broken surfaces grating on each other every time he attempts to take in a full inspiration; the ribs may also, in most cases, be felt working backwards and forwards under the fingers. This crepitating or grating movement cannot, however, be discovered in every case. The pain is sharp, and augmented by moving the trunk of the body, by coughing, sneezing, or attempting to take in a full breath. All that is necessary to be done for the cure of fractured ribs is to apply a broad belt or bandage round the chest, to prevent the ribs from being alternately raised and lowered during respiration, and the firmer it is applied the more relief the patient experiences. It is usual to pass a split cloth over the shoulders, which is to be fastened to the circular bandage, to prevent its being displaced. In general it is proper to draw blood from the patient soon after the accident, and to confine him to low diet for a few days.

FRACTURE OF THE ARM-BONE.

Fractures of the arms are quite frequent. They happen to little children, to adults, and to the aged. It is very important that they should be well managed, because the arms and hands are really more necessary for our comfort and existence than the lower limbs. A man with a broken arm is really more helpless in many respects than one whose leg is broken. Many who are paralyzed in their legs, and yet have the use of their arms, can follow some sedentary occupation, and thus support themselves and their families.

The fracture is sometimes oblique, but more commonly transverse; there is generally considerable displacement of the broken ends of the bone, and more or less shortening of the limb; the latter is sure to occur if the fracture be oblique; the arm hangs useless by the side, and the slightest movement of the limb causes the broken ends of the bone to grate against each other (*crepitation*); in fact, there can be no mistake about the nature of the accident. There is no difficulty in setting this fracture. The operator grasps the elbow with one hand, and gently extends the arm, while with the other he straightens the limb and replaces the bones. To secure the fractured parts in their situation, a splint of strong pasteboard is to be placed along the outside of the arm, from the top of the shoulder to a little way beyond the point of the elbow; and another splint of the

same description is to be applied from the arm-pit to the elbow on the inside. The splints should be steeped in hot water, and padded with some soft substance, to prevent them from galling the skin. "The conjoined breadth of the splints," says Mr. Liston, "should be sufficient to embrace the limb almost entirely; some space being left, so that when the swelling subsides they may neither meet, and consequently lie loose, nor overlap each other. A long bandage or roller, is now to be applied over the whole, commencing from the fingers, and extending it as high as the shoulder. This must not, however, be applied so tight as to interrupt the circulation of the blood in the limb. A wooden splint should be placed on the outside, and another bandage applied; this, however, is only to be retained until the pasteboard splints dry, so as to form a sort of case for the arm. The elbow should be bent at a right angle, and the whole of the fore-arm properly supported in a sling. If pasteboard cannot be obtained, wooden splints may be substituted. On the seventh or eighth day, if the bandages have slackened from the subsidence of the swelling, the bandages must be removed, and one of the splints raised, to ascertain that there is no shortening of the limb, nor any displacement of the bones, and again carefully applied as before. If any deformity be observed it may easily be remedied, for the bones do not begin to unite before the seventh day from the date of the accident. In ordinary cases the bone will be firmly united in about a month; but the arm should not be used with much freedom before the expiration of six or seven weeks.

FRACTURES OF THE BONES OF THE FORE-ARM.

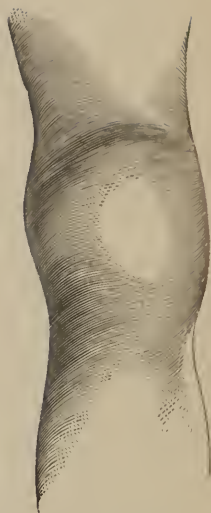
Of the bones of the fore-arm, the one called the *radius*, is more exposed to fractures than the other, called the *ulna*. Fracture of the radius is an accident of frequent occurrence. There is very little distortion unless the fracture takes place close to the wrist, and then there is considerable deformity. Whether the bone be broken high up towards the bend of the arm, or down near the wrist, the fracture may be easily ascertained by tracing the bone with the fingers. In all cases the patient experiences difficulty and pain in attempting to turn the arm round; and if we grasp the limb above and below the part where the pain is chiefly felt, and endeavor to move the hand in different directions, a grating noise will be heard, while a sensation is experienced by the patient in consequence of the motion, which convinces him of the nature of the accident.

When the radius is fractured, the ulna, or inner bone, serves as a splint on one side, while it effectually prevents shortening of the arm, and therefore renders extension unnecessary in setting the frac-

Plate 11.



Fracture of the Knee Cap.



Sprain of Knee.



Dislocation of Ankle.



Dislocation of the Hip.

FRACTURES AND DISLOCATIONS.

ture. There is no difficulty in placing the ends of the bone in apposition, and retaining them in their situation. A pasteboard splint, which has been softened in hot water, is to be placed upon the outside of the arm, from a little above the elbow, to the tips of the fingers, soft pads being interposed between it and the arm. A similar splint is to be applied on the inside, from the bend of the arm to the end of the palm of the hand. A long bandage is then to be applied, to retain the splints in their places. The arm is to be placed in a sling, the palm of the hand being turned towards the breast. The patient must take care to keep the hand in this position, and the wrist steady; no attempt should be made to turn the palm up or down, because nothing tends more to displace the bones.

The ulna, or inner bone of the fore-arm, is not so often fractured as the radius; but is as easily set, and is kept in its place by means of two splints, with a bandage, as above directed.

Both the bones of the arm are sometimes broken; in this case the patient is unable to move the hand; there is much deformity and shortening of the limb, and considerable swelling soon follows the accident. In setting the bones, it is necessary to extend the arm until it is of the proper length, the ends of the bones are then to be placed in contact, and two splints, with a bandage, applied as already directed. It is advisable to apply a wooden splint on the outside of the fore-arm, until the pasteboard splints are sufficiently dry and firm; it is then to be taken away. When the patient is thin, it is customary to place a compress of soft linen or lint between the bones, both before and behind, to prevent them from approaching each other, and growing together. When pasteboard is not at hand, wooden splints may be employed, but the former is always preferable, because it readily takes the shape of the limb, and, when dry, forms for it a sort of firm mould or case.

FRACTURE OF THE FINGERS.

When a finger is fractured, the injury is easily recognized. The treatment consists in applying on the front of the finger a narrow wooden splint, padded with tow or lint, which is to be supported by a suitable bandage.

DISLOCATIONS.

IN consequence of an accident, or some violence, a bone is occasionally dislodged from its natural situation, or, perhaps, removed out of its socket, whereby its proper functions are greatly impeded or obstructed.

and, as such occurrences frequently take place at a considerable distance from any surgical assistance, it appears proper to point out a few of the most common cases of this kind, with the method of restoring them, through the medium of other persons possessed of a mechanical turn.

The dislocation of a bone is usually ascertained with ease, from its being attended with a swelling or degree of protuberance on one side, and a corresponding hollow on the other, which are particularly apparent on making a comparison between the member that has been injured and its fellow ; by tension and pain, and by inflammation and febrile symptoms being present.

The usual causes of dislocations are, any sort of external violence suddenly and forcibly applied, as in falling, leaping, twists, blows, &c.

A recent dislocation may frequently be reduced with great ease by extending the limb, and using such a degree of force, in a gradual manner, either by the hands, or a towel tied round it, as will be requisite to overcome the power and resistance of the muscles. If, with the dislocation, there be a fracture of a part of the bone, the difficulty of reduction will be much increased, as well as the cure protracted. Moreover, when the reduction of a dislocated part has been long delayed, such as to the distance of some weeks, there will be but little prospect of being able to replace it, so that the patient will have a stiff joint, and, if the injury is in the lower extremity, will be rendered lame through life.

Treatment.—When the bone has been displaced for some time, and swelling and inflammation occupy the joint, it will be necessary to bleed the patient, and, after well fomenting the part with flannel cloths, wrung out in warm water, to apply soft poultices composed of oat-meal, oil, and vinegar, for a time, before we make any attempt to reduce it, which should never be done till the tension and inflammation have subsided.

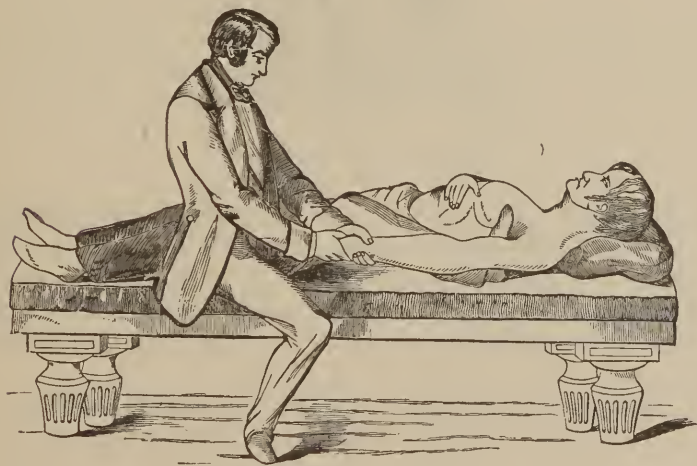
After the reduction has been effected in the manner before mentioned, all that will then be necessary is to apply one or two folds of linen cloth, wetted in vinegar or camphorated spirits, to the part, and keep it perfectly still and quiet, with the muscles in a state of relaxation. If it be the shoulder, arm, or elbow, the arm should be kept in a sling, fastened round the neck. If the lower extremity, it should be raised on a chair, or sofa, as high as that on which the patient sits. When a dislocation and fracture exist together, the healing of the fracture might first take place, previous to any attempt being made to reduce the disjoining.

DISLOCATION OF THE SHOULDER.

The head of the upper bone of the arm may and does slip out in different directions, in consequence of a fall, and other violences. It seldom takes place upwards, however; but most commonly downwards, in which case a hollow place is found in the upper part of it, easily perceived by pressing the finger on it. The head of the bone may also be felt in the arm-pit, and the patient cannot move the limb without experiencing severe pain.

In such a case there is a considerable difference in the length of the arm which has not been injured, when compared with the one which is dislocated, and, when it remains long in this state unassisted, a swelling and impaired sensibility of the limb ensue. Moreover, there is an inability to move the arm, and every attempt to do so is attended with considerable pain.

When the bone has been recently dislocated, and no tension and inflammation have come on, it may, in general, be readily reduced by employing a moderate force; but when it has remained out of its socket for a considerable time, the operation of reduction will prove both painful and difficult.



SETTING THE SHOULDER.

Treatment.—When a dislocation of the shoulder is accompanied with swelling and inflammation, the reducing it should be suspended until these have in a great degree subsided. The limb is to be kept perfectly at rest, and the part moistened with vinegar and water, by linen cloths wrung out therein.

As soon as the swelling and inflammation have subsided, the

following course should be adopted. The patient is to be placed upon a low stool, an assistant is then to hold the body very firmly, so that it cannot give way on exerting the necessary force, whilst another person lays hold of the arm a little above the elbow, and gradually extends it, increasing the force as may be requisite. The operator then is to put a napkin under the patient's arm, causing it to be tied behind his own neck, and by this he is gradually to



SETTING A DISLOCATED SHOULDER.

raise the head of the bone, whilst at the same time a considerable extension and resistance are effected by the assistants, and with his hands directs it into its right place, on which a slight crack or noise is usually heard. After the reduction the parts may be rubbed with camphorated liniment made gently warm, and the arm be kept very still by putting it into a sling.

Dislocations of the shoulder, though they may be readily set by a surgeon, are yet very serious injuries, and those who meet with such an *accident*, or *who have reason to suspect that it has happened to them*, should avail themselves of skilled surgical assistance if it can be obtained. It is proper to remark just here, that many of those who profess to be natural bone-setters, are really great humbugs. They often pretend to set bones that were never out of joint.

Should pain, swelling, or inflammation succeed the reduction of the bone, they are to be relieved by topical bleeding with leeches,

laxative medicines, and a cooling regimen. If the limb remains in a weak state for any length of time in consequence of the injury, pouring cold water from a tea-kettle, or pumping on it, may be likely to strengthen it.

DISLOCATION OF THE ELBOW.

The bones of the fore-arm may be dislocated in various directions, and the injury may readily be discovered by the patient's inability to bend the limb, together with its stiffness, and a protuberance being observed on that side of the arm towards which the bone is pushed, although this is occasionally obscured by a degree of swelling and inflammation.

To reduce a dislocation at the elbow, it will be necessary to have the assistance of two persons, one of whom must hold the arm above, and the other below the joint; an extension is then to be made by one of them in a gradual manner, till the operator is enabled to return the bones into their proper place, after which the arm is to be bent, and kept suspended in a sling for a considerable time, the injured part being for a few days frequently wetted with equal parts of vinegar and camphorated spirits.

Dislocations of the wrists, fingers, &c., are to be reduced much in the same manner as those of the elbow, viz. by making a proper extension, and guiding the bones into their natural situation with the operator's fingers.

DISLOCATION OF THE THIGH-BONE.

The head of the thigh-bone may be dislocated in almost any direction, but in general it takes place inward and downward. In this case the knee and foot are turned outwards, and the leg is longer than the other. But when it is displaced backward, it is usually pushed upwards at the same time, by which the limb is shortened, the foot turned inward, and the head of the thigh-bone may be felt on examination.

To replace this bone when it is dislocated forward and downward, the patient must be laid on his back, and either be held by proper assistants or fastened by bandages. A strong extension is then to be made by other persons through the means of a sling fixed on the thigh a little above the knee, and during this period the head of the bone is to be pushed outward by the operator, till it slips into its socket. If the dislocation be outward, the patient must be laid on his face, and while the assistants are making due extension, the operator is to push the head of the bone inward until it is

replaced, to succeed in which effectually, a proper co-operation of the assistants in raising the bone must be attended to.

Dislocations of the knees, ankles, and toes are to be reduced by making a due extension in opposite directions, through the medium of assistants, while the operator replaces the bones in their right situation. When tension and inflammation prevail, active means by both general and topical bleeding, freely evacuating the bowels by purgatives, and confining the patient to a spare regimen, must be resorted to, not only in dislocations of the thigh-bone, but likewise in those of the minor ones.

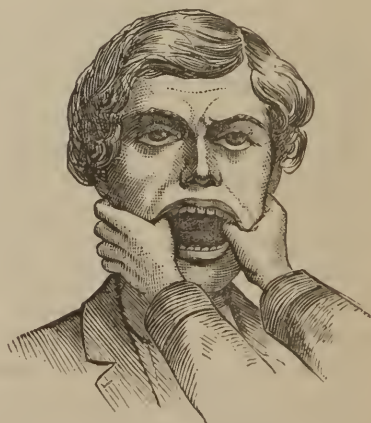
In very robust persons, the force of the muscles sometimes resists every effort to reduce a disjoined limb, in which case it may be well to excite some degree of languor and debility, either by putting the patient into a warm bath, or giving him a grain or two of tartarized antimony, the operator taking the advantage of the effect produced thereby previons to the act of vomiting, for reducing the dislocated bone; or by the inhalation of chloroform, or sulphuric ether.

DISLOCATION OF THE JAW-BONE.

To reduce a dislocation of the jaw-bone, the person is to be placed on a low stool, and his head being firmly held by an assistant, the operator is then to thrust his two thumbs, covered with



DISLOCATED JAW.



SETTING THE JAW.

linen cloths that they may not slip, as far into the mouth as he can, while his fingers are applied externally to the jaw. After he has

got a firm hold of this, he is to press it strongly downward and backward, by which means the protruded ends of the jaw-bone may be easily restored to their proper cavities or sockets. The jaw is afterward to be kept still for some time, the patient avoiding mastication, particularly of any hard substance, till the parts have acquired their former tone.

DISLOCATION OF THE NECK.

When the neck is completely dislocated, speedy death ensues if it is not instantly replaced, owing to the pressure made by the parts on the spinal marrow. If it be only partially displaced, the life of the patient may be preserved if the reduction be promptly made.

When only partial dislocation of the neck has taken place, the chin appears fixed to the patient's breast, which prevents his speaking, swallowing, or at all moving the parts; his face is generally turned towards one side, his countenance appears bloated, and his neck swells. Moreover, he is deprived of sensibility.

The patient must be turned immediately on his back, and the operator place himself immediately behind him, so as to be able to lay hold of his head with both his hands, whilst a proper resistance is made by fixing his knees against the shoulders of the patient. The head is then to be pulled with some force, which is to be gradually increased, the head being moved at the time from side to side until the joint is replaced, and this may be known by the snapping of the bone when passing into its socket, as well as from the sensibility of the patient being in some measure restored, and his beginning to breathe.

After the dislocation has been reduced, the head should be secured in its place by a proper bandage, the parts be well bathed with camphorated spirits, the patient bled and put to bed, and the bowels freely purged. Until the tone of the injured part is properly restored, quietness will be necessary, and for a due length of time a spare diet will be advisable.

RUPTURES.

Ruptures are common to both sexes, although, from the peculiar structure of the parts where they most usually occur, they are far more frequent in males; and are occasioned by a variety of causes which tend to overcome that nice balance of forces, which exists in

every individual, between the intestines themselves and the surrounding muscles which contain them; the first by their elasticity tending to escape outwards; the second by their contractile structure exerting a uniform compression, and opposing their displacement. There are, at the lower part of the belly, corresponding to the bend of the thigh, certain openings, by which vessels, &c., pass out; and it is through these openings that a bowel is protruded, when, by any sudden exertion, the whole mass are forcibly pressed downwards. Among the most common causes are violent horse exercise, or violent exertion of any other kind, more particularly when the body is tightly girt by stays, belts, high trowsers, &c. The causes which predispose to this accident, or, in other words, the peculiar state of the individual most favorable to its occurrence, is a laxity of fibre, from constitutional weakness, or from a previous dilatation or extension of the walls of the body from dropsy or child-bearing.

Be careful not to keep a truss on while a hernia is still down; it may excite an inflammation which will make it impossible to return it again, or it may indeed cause strangulation of the hernia and sudden death.

A hernia is comparatively a slight trouble so long as it is easily put back, but a slight injury may render it at any moment a most dangerous condition.

As this condition may be caused by a badly fitting truss alone, be careful either to wear no truss at all, or else to be sure that the one you use fits you accurately.

Ruptures in adults are rarely completely cured; but ruptures in children, if properly treated, may be considered as a rule pretty surely curable, with a permanent and satisfactory result.

The treatment must consist in the use of a good-fitting, easy truss, applied just as soon as the rupture is first discovered.

Do not delay treatment for a day; if you do, it will and must get worse and worse daily.

Not only must the truss be applied early, but its use must be maintained constantly; it must not be removed even for the time of using a bath or being washed, because a single momentary protrusion undoes all the good that it may have taken weeks to accomplish.

In the absence of a truss, while one is being procured in these cases, pass a narrow bandage around the body, and then from that pass another down the groin, and around behind the buttocks, fastening it by successive turns to the bandage behind. This will suffice to bind down over the seat of the rupture a little pad, which may be made of muslin or soft flannel, and prevent it from protru-

sion more or less during crying or violent motion of the little patient, until a truss be procured.

This complaint may exist for a considerable length of time, and cause no inconvenience to the patient, nor in any way affect his health; but notwithstanding this, should he neglect the use of the truss, or abandon it too early, under the impression that he is cured, and that he has no relapse of the accident to apprehend, he is but too frequently lulling himself into a fatal error; for the parts, from a slight cause, will again suddenly protrude, and often become difficult of reduction, or sometimes even incapable of being replaced. This latter state is what is generally termed strangulated rupture, and oftentimes requires a surgical operation; for it is, in certain cases, so dangerous, that without this, the patient's life must infallibly be lost.

Now, the use of the truss, be it clearly understood by every one, is to press upon the opening, and supply an artificial strength to the surrounding fibres, whose power of resistance has been overcome by the violence already spoken of. *It is quite evident, therefore, that the first thing to be done, when a rupture has been distinctly recognized, is to return the protruded parts into their natural place, and maintain them by an accurate and well regulated pressure for a considerable period of time.* No delay should ever be indulged in, whether the rupture be altogether new, or one which has been already long existing; for strangulation occurs so suddenly, that frequently, before a surgeon can be procured, or employ the means of his art, the danger has become insurmountable.

How, then, is a rupture to be recognized?—There is to be perceived, in the parts in which rupture usually takes place, a swelling, sometimes tense or elastic, at others soft and compressible, without any discoloration of the skin. The causes of the accident should be considered, and will probably reveal at once the fact. However, the more certain signs are, a variation in the size of the swelling from the position of the individual; being smaller while he is lying down, and larger when he is standing upright and holds in his breath; a disappearance, or at least considerable diminution, when pressure is exercised upon it, and a return to its former dimensions when that pressure is removed. The swelling is usually larger and more tense when the patient coughs, or after he has taken a full meal; but is, on the contrary, smaller and softer in the morning before he has broken his fast. He is often troubled with colic, vomiting, and constipation.

When the rupture is easily reducible, it is sufficient to place the individual in a convenient position, and exert a gentle compression upon the swelling from below upwards, and a peculiar gurgling

noise will at once announce that the protruded bowel is restored to its proper place. But when, on the contrary, the rupture is strangulated, (which is known by the great hardness and pain under pressure, or from coughing, sneezing, or any other agitation of the body; by the absolute constipation; the continuance of vomiting; and the general symptoms of fever,) something more is required than a mere attempt at pushing up the intestine. The warm bath should be first employed. If this fail, bloodletting must be resorted to, which had better be practised while the patient is in the bath. It is hardly necessary to observe, that, in all such cases of danger, no time should be lost in procuring the aid of a surgeon; but such is the danger of a strangulated rupture or hernia attended with the symptoms last described, that it is highly advisable, when a considerable delay would take place before his arrival, to employ the means first pointed out, which are not only the best, but by far the most secure in the hands of others than regularly educated practitioners.

The position of the patient at the time of effecting the restoration of the intestine is of the highest consequence. He should repose on his back, his head and shoulders raised with pillows, his body bent, to put the muscles of the belly into perfect relaxation, by the knees being brought upwards. The person who officiates should then take hold of the neck of the swelling (for it is of the form of a pear the thick end downwards) with the left hand, while with the right he grasps the larger portion, and gently pushes the protruded parts upwards, which the left hand is intended to direct through the opening. This should be done very gradually, and patiently, and always in the direction in which the parts have protruded. It will sometimes require to be persisted in for a considerable time, (perhaps for an hour,) before all hope of reduction can be fairly given up. If violence be employed the greatest danger is liable to ensue; mortification being almost sure to follow.

While the patient is in the warm bath, and before the reduction is attempted by the hand, he should be placed as directed for the latter attempt, and not unfrequently the parts return of themselves.

When bleeding and the warm bath have been employed without avail, the end has been attained by dashing cold water over the parts. But this should only be done as a last resource.

BRUISES.

A SLIGHT bruise is of little consequence, and requires no particular attention; but when severe, it demands proper treatment. A severe

bruise is followed by swelling and discoloration of the injured parts, as is exemplified when a blow is received on the eye, which causes what is commonly called a black eye. The extensive discoloration which, in many cases, arises from a bruise, alarms some patients; this is, however, a favorable sign. Danger arises in consequence of blood escaping from the vessels in particular situations, and not from the quantity discharged. Hence, a small quantity effused into the brain, in consequence of a blow on the head, or into the chest or belly, from a similar cause, will endanger life, and probably cause death; while a large quantity thrown loose under the skin, causing extensive discoloration, may be rapidly absorbed without much inconvenience to the patient. A severe blow received on a large joint always produces serious consequences; and a blow on the lower part of the belly may burst the bladder, if it happen to be distended with urine at the time, and cause death.

The effusion of blood under the skin is not the only effect of a bruise. The muscles, and other soft parts, are generally injured, and remain in a weak and painful state during a longer or shorter time, according to the severity of the injury; or they may be so destroyed as to deprive them of life. In this case *sloughing*, as it is called, or the separation of the dead parts from the living, must take place.

Treatment.—The first thing to be attended to in treating a bruise is to prevent inflammation. Cold lotions should be constantly applied to the parts. The sooner they are employed the better. When resorted to early, they are not only useful in keeping off and subduing inflammation, but tend also to prevent the further effusion of blood from the lacerated vessels. The best lotions are those in common use, namely, Goulard water and vinegar, or spirits and water. When the bruise is slight, and the injured parts kept at rest, no other treatment than this will be required. But if inflammation comes on in consequence of a severe bruise, leeches ought to be repeatedly applied, low diet strictly adhered to, and the bowels freely opened by occasional doses of cooling purgatives. Quiet is necessary. The inflammation which arises from a bruise seldom terminates in suppuration; but, if the formation of matter appears inevitable, the cold lotions should be discontinued, and warm poultices applied.

If the above means have had the effect of preventing or subduing inflammation, apply friction with opodeldœ, the compound camphor liniment, or sal-ammoniac, half an ounce, vinegar and spirits, of each twelve ounces, mixed.

The pouring of cold water from a height on the bruised parts, two or three times a day, is one of the best remedies that can be

used. Pressure by the application of a bandage rolled round the parts is also an excellent treatment. The application of electricity in bruises oftentimes is of very great service (see *Electricity*). It seems to aid absorption. The best method of application in such cases is with the hand of the operator.

BURNS AND SCALDS.

Burns are usually divided into four varieties or degrees.

In the *first* degree there is redness, slight swelling, heat, and acute pain of the part. These symptoms continue a few hours, or perhaps two or three days; in the latter case the injury terminates in a peeling off of the scarf-skin.

In the *second* degree there are, in addition to the symptoms of the first, vesicles (or bladders) filled with a transparent fluid of a pale, yellowish color; this fluid (or serum) lies between the true skin and the thin scarf-skin (or cuticle).

In the *third* degree the life of the (true) skin is destroyed, and the burned part presents a moist and soft surface of a yellowish or brown color, with or without vesicles, containing fluid of a dirty brown or of a bloody and turbid appearance; or it may be dry, black, and charred.

In the *fourth* degree the injury extends deeper than the skin, the fat and muscles are more or less destroyed, and the tendons, ligaments, and other parts, even as far as the bone, may subsequently inflame and mortify.

When parts are burned deeply, so as to destroy their vitality, the pain is less severe than when the surface of the skin only is injured.

When a great extent of surface is burned, the intensity of the pain may cause death in the course of a few hours.

After a burn of the worst description, the patient complains of being cold, his pulse is weak and almost imperceptible, and shivering usually comes on. If there be also great pain, he soon falls into a state of stupor or insensibility, which, if reaction do not take place, continues until death. This state of insensibility to pain seems wisely ordained to prevent the extreme suffering which would otherwise be the fate of the unfortunate patient.

Treatment.—It becomes every one to know how to act in case of such accidents, because burns are inflicted suddenly, medical men are not always at hand, and yet it is necessary to do something immediately, to relieve the acute pain which follows these injuries.

The want of presence of mind at the time of the accident often renders burns more severe than they otherwise would be. How frequently does it happen that females, when their dresses catch fire, instead of taking the most prompt means of extinguishing the flames, generally increase them by running about screaming for assistance, when they ought to lie down on the floor and roll over and over on the carpet. The erect position of course allows the flames to spread and rise rapidly to the head and neck—parts where the fire is most to be dreaded; whereas the horizontal position, on the contrary, has a considerable effect in preventing their extending. In such cases the hearth-rug, table-cover, a shawl, or any woollen article, are the things to be used by any one who may happen to be near, for the purpose of extinguishing the flames. It also frequently occurs when the legs and feet are scalded, that instead of cutting the stockings and removing them gently, they are drawn off, carrying the scarf-skin along with them; and the true skin being then exposed, the most excruciating pain is produced.

The principle on which burns are now treated is that of excluding them from the air; which may be done by covering the burned or scalded parts with flour, or enveloping them with cotton wool. It is in general advisable, before employing the cotton, either to immerse the parts in cold water, if their situation will admit of this being done, or apply to them pieces of fine linen dipped in cold water, or vinegar and water, and wetted frequently during several hours, or until the pain and heat are removed. But when the burned surface is extensive there is always a sensation of chilliness, which is generally accompanied with shiverings. In this case cold applications would do harm, and they ought not to be employed, even when the burn is slight, if there be a tendency to shivering; nor should they be continued if the patient be not relieved by them, or if they bring on shivering; and they are always improper when the injury is on the breast, belly, or on any part of the trunk of the body.

When the legs and feet are scalded, they should be plunged as soon as possible into cold water, and kept immersed in it a considerable length of time before the stockings are removed. By this means blisters are often prevented.

The blisters, or vesicles, which frequently make their appearance suddenly in consequence of a burn or scald, should be punctured with a needle, and the fluid allowed to escape. The burned parts are afterwards to be carefully washed with tepid water before applying flour or cotton.

The cotton employed should be finely carded, and then applied over the burned surface in thin layers, one over another, until there

is a covering sufficiently thick to exclude the air, and protect the parts from undue pressure. Bandages are then to be applied over the whole of this envelop, so as to keep up a moderate and equal degree of pressure. In mild cases this dressing will be sufficient, and when removed in the course of ten or fourteen days, the part will be found covered with new skin. But if the discharge of matter be very profuse, it will find its way through the dressing, the soiled part of which must then be removed, allowing that which adheres to the skin to remain, and fresh layers of cotton applied with as little delay as possible, in order to prevent the action of the air on the burned parts. The dressing is to be renewed in this manner as often as it may be found necessary, until the cure is completed.

The application of flour to burned and scalded parts has long been popular. This method is preferable to the use of cotton, inasmuch as the flour relieves the pain almost as soon as it is applied, thus rendering the application of cold lotions unnecessary.

In cases of deep burns, treated either by cotton or flour, it becomes necessary to remove the dressing and examine the parts about once a week, until the sloughs have separated, and the subsequent discharge of matter is diminished. After the dead parts have been detached, it is often found difficult to keep down proud flesh; in such cases pressure over the dressing by means of sheet lead has an excellent effect when properly graduated. The principal advantage derived from cotton or flour is during the acute stage; and therefore, when the crust or paste formed in the manner above mentioned is detached from the ulcerated surface, the ulcers may either be treated by astringent lotions, pressure, keeping the proud flesh under by touching it with lunar caustic or blue vitriol, and the other means in general use in such cases (see *Ulcers*); or the flour or cotton may be re-applied and removed every six or eight days until a cure is effected.

The dressings should be changed quickly, so that the parts may be exposed as little as possible to the air; and when the burned surface is extensive, it must not be all exposed at once. *Another remedy is carbolic acid*, in solution, and a more recent remedy is the application of common baking soda.

In whatever manner burns may be treated, the greatest care must be taken to prevent contractions of joints, and improper adhesions between the raw surfaces. The position ought always to be such as to keep the skin extended. Hence, when the front of the arm and fore-arm, or the back of the leg and thigh, are burnt, splints are required to keep the limbs extended; but attention must be paid not to allow the joints to become stiff by retaining them

too long in one position ; they ought to be moved by an attendant from time to time in order to prevent rigidity, otherwise it might afterwards be both a tedious and difficult matter to restore them to freedom of motion. To prevent raw surfaces from adhering to each other they must be kept separated by placing something between them ; for example, to keep the fingers from growing to each other, it is usual either to place strips of adhesive plaster between them, or to keep them extended on a hand-board.

In slight burns no internal treatment is necessary, repose and low diet are sufficient ; but in severe cases, when there is shivering, or a tendency to it, and the patient complains of being cold, and has sickness at stomach, a pale countenance and weak pulse, stimulants are indicated ; a little brandy or wine and warm water, with six or eight drops of laudanum, are to be given occasionally ; and bottles of hot water, or hot bricks, are to be applied to the feet, until the system recovers from the sudden shock which it has received, and reaction takes place. The warm bath is the best thing for restoring reaction in children.

During the inflammatory stage the diet must be very sparing, and confined to vegetables, fruit, and farinaceous substances ; and barley-water, with thirty or forty grains of nitre, may be given in the course of the day, or the patient may drink freely of soda-water, lemonade, or any other cooling beverage. Attention should also be paid to the state of the bowels, which are to be kept moderately open, without producing purging ; for this purpose castor-oil is preferable to saline medicines, which might bring on shivering. The feverish symptoms, after being absent for many days, may return at the time when the eschars or sloughs are being detached, and the same treatment is then again requisite.

When there is much ulceration, with a free discharge of matter, the patient's strength must be supported by light and nourishing diet, such as soup, jelly, and light puddings ; and at dinner a little chicken or fish, with a moderate quantity of wine or porter, may be allowed. In this stage it is also advisable to give a grain of quinine in port-wine twice or thrice a day, in order to increase the appetite and promote digestion.

We wish to turn the attention of our readers to a preparation designed for injuries upon the surface of the skin, whether by violence, burns, or otherwise. It consists simply of a solution of gun cotton (a recent discovery) in ether, or collodion (see *Collodion*). Upon the application of this liquid the ether almost instantly evaporates, leaving upon the surface of the wound an almost imperceptible shield, answering the purpose of a new and instantaneous *epidermis*,

or outside skin; thus protecting the wound securely from the aggravating influence of the air, dust, &c.

Yet the *common* gun-cotton, although partially soluble in ether, and forming a shield analogous to what we have described, is not a perfect preparation. The gun-cotton should be prepared with particular reference to this specific purpose. Otherwise it will leave a deposit upon the wound resembling whitewash; whereas the preparation which we recommend leaves, as we have said, a shield almost imperceptible to the eye.

TO RESTORE PERSONS APPARENTLY DEAD FROM DROWNING.

THE DIRECT METHOD OF PROF. BENJAMIN HOWARD, OF NEW YORK,

As taught under the auspices of the METROPOLITAN BOARD OF HEALTH OF THE CITY OF NEW YORK.

RULE 1.—*Unless in danger of freezing, never move the patient from the spot where first rescued, nor allow bystanders to screen off the fresh air, but INSTANTLY wipe clean the mouth and nostrils, rip and remove all clothing to a little below the waist, RAPIDLY rub dry the exposed part, and give two quick, smarting slaps on the stomach with your open hand.*

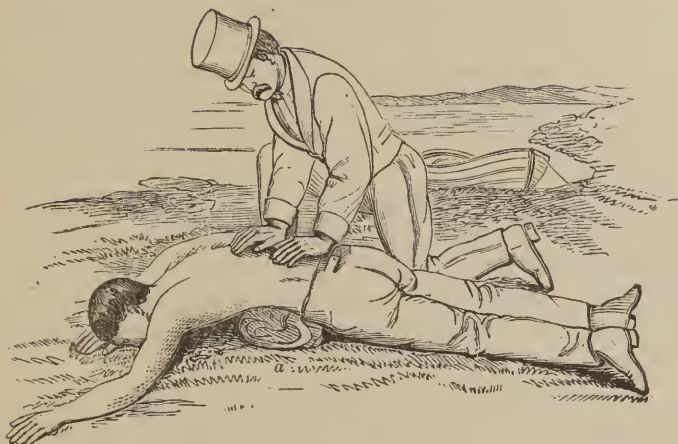
If this does not succeed immediately, proceed according to the following rules to perform artificial breathing:

RULE 2.—*Turn the patient on his face, a large bundle of tightly rolled clothing being placed beneath his stomach, and press heavily over it upon the spine for half a minute.*

RULE 3.—*Turn the patient quickly again on his back, the roll of clothing being so placed beneath it as to make the short ribs bulge prominently forward, and raise them a little higher than the level of the mouth. Let some bystander hold the tip of the tongue out of one corner of the mouth with a dry handkerchief, and hold both hands of the patient together, the arms being stretched forcibly back above the head.*

RULE 4.—*Kneel astride the patient's hips, and with your hands resting on his stomach, spread out your fingers so that you can grasp the waist about the short ribs. Now, throw all your weight steadily forward upon your hands, while you at the same time squeeze the ribs deeply, as if you wished to force everything in the chest upwards out of the mouth. Continue this while you can slowly count—ONE,—TWO,—THREE;—then SUDDENLY let go, with a final push, which*

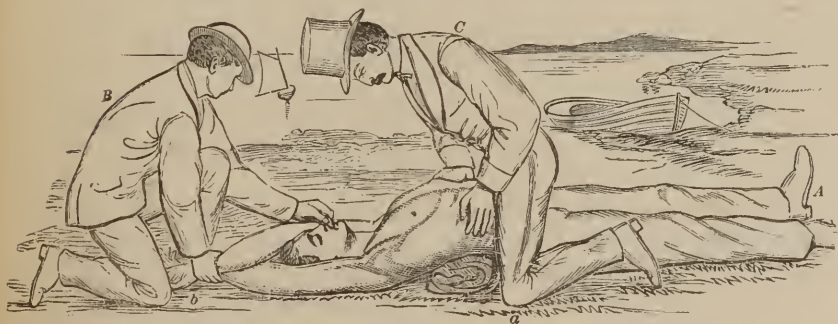
FIG. 1.



MODE OF FORCING AND DRAINING OFF WATER AND OTHER ACCUMULATIONS FROM THE STOMACH, THROAT, AND MOUTH, ACCORDING TO RULE 2, PREPARATORY TO PERFORMING ARTIFICIAL BREATHING.

a, Patient's clothing rolled tightly.

FIG. 2.



MODE OF PERFORMING ARTIFICIAL BREATHING ACCORDING TO RULES 3 AND 4.

A, Posture of patient according to Rule 3—arms extended backward, and ribs thrown prominently forward by roll of clothing (a) beneath back.

B, Assistant holding tongue, so as to prevent it falling back into the throat and blocking up air-passages to chest. By using handkerchief or similar article, the tongue cannot slip from the grasp. C, Right hand of assistant grasping both wrists of patient, keeping arms forcibly extended backwards. If not available, the assistant may be dispensed with.

C, Operator forcing out of chest all foul air, preparatory to the sudden letting-go, which compels an burst of fresh air, on the principle of the ordinary bellows. The operator may, if he choose, kneel beside the patient, or in case of a child, where little force is required, may conduct the process in any attitude most convenient.

springs you back to your first kneeling position. Remain erect upon your knees while you can count—ONE,—TWO;—then throw your weight forward again as before, repeating the entire motions—at first about four or five times a minute, increasing the rate gradually to about fifteen times a minute, and continuing with the same regularity of time and motion as is observed in the natural breathing which you are imitating.

RULE 5.—*Continue this treatment, though apparently unsuccessful, for two hours, until the patient begins to breathe; and for a while after this help him by well-timed pressure to deepen his first gasps into full, deep breaths; while the friction of the limbs, which should if possible have been kept up during the entire process, is now further increased.*

RULE 6.—AFTER-TREATMENT—EXTERNALLY. *As soon as the breathing has become perfectly natural, strip the patient rapidly and completely. Enwrap him in blankets only. Put him in bed in a room comfortably warm, but with a free circulation of FRESH AIR, and except for the administration of internal treatment, let him have PERFECT REST.*

INTERNALLY. *Give a little hot brandy and water, or other stimulant at hand, every ten or fifteen minutes for the first hour, and as often thereafter as may seem expedient.*

THE PHILOSOPHY OF THE TREATMENT.

Death from drowning is caused not because of the presence of water as such, but because of the absence of fresh air from the chest.

Whether excluded by water, as in drowning; by a cord closing the windpipe, as in hanging; by dense smoke, as in a burning building; by foul gas, as in an old well, or from escape of ordinary burning gas into a close room; whether by burying the face in a soft pillow, or by a piece of tough meat lodged in the throat, corking up the entrance to the windpipe—in all these cases the immediate cause of death is one and the same.

The BREATH is the LIFE. Let it be shut out from the chest, or anything else be entirely substituted for it, and *suffocation* at once begins, and this continued always ends in *death*.

To avert death, then, and reawaken life in all these cases, you must not begin by giving a little stimulus, or “something reviving,”

as it is called ; not by applying hot blankets, nor putting the patient into a nice warm bed. The first and instant necessity is, if possible, to GIVE *breath* until the patient is sufficiently recovered to be able to TAKE *breath* for himself. This alone can start life again, and maintain it in action. If the draft and door of a stove is long kept tightly closed the fire dies away to an interior spark. If in this condition you begin to put in more coal, your disturbance is very likely to completely extinguish the remaining spark.

To apply heat in any form to the *outside* around the stove would be simply absurd and ridiculous. If, on the contrary, you should open the draft, rake away the ashes and dead coals from the mouth of the draft up to the interior spark, open the damper and set a current of air in motion through the stove, or in a great emergency add a few gentle steady puffs from the bellows, you would be adopting what all experience proves to be the most sensible and only successful way to rekindle your fire to brightness and warmth.

The relation of fresh air to the burning of a fire is precisely what it is to the reviving and continuance of life. Therefore, if the friction, the breeze, and the slap upon the nerves over the stomach, as directed in *Rule 1*, fail to startle and revive the patient, then it is necessary to at once see that the track from the mouth to the chest is clear, so that the passage of air to the chest be not obstructed.

By following the directions of *Rule 2*, fluids accumulated in the stomach, chest, or throat are removed. The stomach, at a greater elevation than any other part of the track, is pressed between the roll of clothing and the spine, whence water or other accumulations have a complete *drainage* down to and out of the mouth, which is the lowest point.

The next step is to induce air to enter the chest by what is called artificial breathing or respiration. *Rule 3* prevents the tongue tumbling back into the throat, to choke it up as by a piece of dead meat, and provides for its tip being kept out and to one side of the mouth. Also by keeping the arms well stretched back, helps to keep the chest somewhat expanded.

The actual breathing is effected by the directions in *Rule 4*. In order to understand this, it must be remembered that the chest containing the elastic lungs is an open-work, ribbed, bony box, which above the bottom of the breast-bone is scarcely movable, except by one's own will, the ribs being fastened both in front to the breast-bone and behind to the spine. The ribs below the breast-bone, known as the short ribs, are fastened only behind to the spine; they are very elastic and loose, and thus are called the floating ribs.

It is this enables any foolish woman to diminish the size of her waist to any standard fashion may demand.

All the breathing necessary to life can be performed by this part of the chest alone, as is generally the case during sleep.

When the pressure is made upon this part of the chest, then, as directed in *Rule 4*, the cavity of the chest is greatly diminished; what air is in it is partially forced out, and on suddenly letting go, the natural elasticity of these semi-cartilaginous ribs compels them to spring back to their natural position. This would create a vacuum, but that the fresh air is thus compelled to rush in through the mouth to occupy the otherwise vacant space.

This action, repeated as directed, compels successive volumes of fresh air to enter the chest just as occurs in natural breathing, and so it is called and constitutes "artificial breathing" or "artificial respiration."

The first returning natural gasps are apt to be irregular, and if the artificial breathing be continued regardless of them, the motions of the operator may actually interfere with and interrupt them; therefore, as directed in *Rule 5*, let your motions be so timed to the natural effort of the patient as simply to aid and deepen his breathing, which is as yet imperfect and insufficient.

With life comes heat, but the latter may be greatly favored by following the direction in *Rule 6*. *Warmth, rest, and fresh air* are now to be regarded as important means of completing the resuscitation already begun.

To make this chapter more complete, the following method of artificial respiration, known as Marshall Hall's, or the "Ready Method," is appended; it is described by its author as follows:

"Place the patient on his face, his arms under his head, that the tongue may fall forward, and leave entrance into the windpipe free, and that any fluids may flow out of the mouth; then

"Turn the body gradually but completely on the side and a little more, and then again upon the face alternately, to induce inspiration and expiration.

"When replaced, apply pressure along the back and ribs, and then remove it to induce further expiration and inspiration, and proceed as before.

"Let these measures be repeated gently, deliberately, but efficiently and perseveringly, sixteen times in the minute only."

HANGING AND SUFFOCATION.

Hanging induces death chiefly because the rope closes the

windpipe, and keeps fresh air from the lungs. *Suffocation*, whether caused by something covering the mouth, or by smoke, foul gas of wells, or other noxious vapors, causes death from the same cause equally, viz., by preventing fresh air from reaching the lungs.

In hanging, the first thing is instantly to cut and remove the cord

Then proceed at once to perform artificial breathing, as directed in drowning, dispensing, of course, with the attempt to remove accumulations from the mouth or chest, and being careful to keep the head raised a little more than in the position after drowning, because in hanging the head becomes filled with blood, and this congestion is partly relieved by a more elevated position of the head.

In *suffocation*, proceed simply with the process for artificial breathing, just as for hanging.

STILL-BIRTH.

If the infant does not breathe immediately on coming into the world, be careful not to divide the navel-string for the present, because so long as that is complete the blood of the mother continues to nourish the child, just as it did in the womb. Wipe cleanly from its mouth and nostrils all mucus, and give it a smart slap with your open hand upon the belly. Dash upon its face sharply a little very cold water, then a little warm water, then a little cold water. If this does not succeed cut the cord, wrap the child in flannel, and proceed at once with artificial breathing, as for suffocation, but with this difference:—remember the infant has never once had any air enter its lungs, so there is none which by pressure can be displaced, therefore it is better to try and blow up its lungs first, and apply pressure afterwards; or let one person blow while another person makes the pressure for artificial breathing. In order to do this properly, wipe the nose and lips of the child very clean; open the mouth wide, by pressing your forefinger down upon the tongue and lower jaw. Let some one else press upon the larynx, or Adam's apple, as it is called, so as to keep it at the back part of the throat, and prevent any air from passing behind it into the stomach. Now apply your lips to the lips of the child, and steadily and forcibly blow, not quite emptying your own chest. Now let your assistant make the pressure, as described; then blow again, and so on, alternating the blowing and the pressure, in imitation of natural breathing; continuing the process, if necessary, for an entire hour, without intermission.

HEMORRHAGE FROM WOUNDS.

Firm, steady pressure on the bleeding part is the first treatment

for bleeding wounds in every case, and will usually be at once successful.

Cold—ice or ice-water—is very efficient when only small blood-vessels have been divided.

Pressure above the wound, applied in the course of the artery, is more reliable than either the other methods. In the arm or thigh this may be made and continued by tying a stone in a handkerchief, allowing the stone to rest right over the course of the artery, and then tighten it thereupon, by twisting the ends of the handkerchief around a stick, constituting a tourniquet sufficient to control the most violent hemorrhage, until the patient can be better cared for.

TREATMENT OF PERSONS STRUCK WITH LIGHTNING.

“When persons happen to be overtaken by a thunder storm, although they may not be terrified by lightning, yet they naturally wish for shelter from the rain which usually attends it, and therefore, if no house be at hand, generally take refuge under the nearest tree they can find. But in doing this they unknowingly expose themselves to a double danger; *first*, because, their clothes being thus kept dry, their bodies are rendered more liable to injury, the lightning often passing harmlessly over a body whose surface is wet; and, *secondly*, because a tree or any elevated object, instead of warding off, serves to attract and conduct the lightning, which, in its passage, frequently rends the trunks or branches, and kills any person or animal who happens to be close to it at the time. Instead of seeking protection, then, by retiring under the shelter of a tree, hay-rick, pillar, wall, or hedge, the person should either pursue his way to the nearest house, or get to a part of the road or field which has no object that can draw lightning towards it, and remain there until the storm has subsided.

“It is particularly dangerous to stand near leaden spouts or iron gates at such times; metals of all kinds have so strong a conducting power for lightning, as frequently to lead it out of the course which it would otherwise have taken.

“When in the house, avoid standing near the window, or door, or walls, during a thunder-gust. The nearer you are placed to the middle of a room the better.

“When a person is struck by lightning, strip the body and throw bucketsful of cold water over it for ten or fifteen minutes; let continued frictions and inflations of the lungs be also practised; let gentle shocks of electricity be made to pass through the chest, when

a skilful person can be procured to administer them ; and apply blisters to the chest."

TREATMENT OF APPARENT DEATH FROM THE EFFECTS OF COLD.

The body should be brought into a room in which there is no fire, and rubbed with snow or cloths dipped in cold water. The frictions should be directed from the stomach towards the extremities. In a few minutes after, the temperature of the water should be very gradually increased, so as not to heat the body suddenly. Stimulants may be applied to the lips and nostrils.

The lungs must be inflated as in the treatment of the drowned. When the natural warmth of the body is returning, the patient should be put into a bed, wrapped in dry blankets, and be well rubbed with a flesh-brush. A little weak wine and water may be given, or a clyster administered containing a little wine or something slightly stimulative.

Strict diet should be adhered to for some time after recovery.

When the limbs only are frozen, the application of snow or wet cloths is to be confined to the affected parts ; half a teaspoonful of hartshorn in a glass of water may be advantageously administered, or a little weak spirit and water.

CONVULSIONS IN CHILDREN.

In children there are two remarkable kinds of convulsions, namely, what are called inward fits, and the common violent convulsions. The inward fits occur generally during sleep, and are known by the corners of the mouth being drawn up into a sort of smile ; the eyelids are open, and the eyes are usually turned up, so as to show the whites. There is a fluttering in the breathing, and the child frequently starts. Fits of this kind are generally relieved by a warm cordial medicine, such as a little aniseed or syrup of rue ; appearing as they do to depend on wind and flatulence of the intestines.

As to the more violent convulsions, they depend on disorders of the nervous system, most usually brought about by the irritation dependent on teething. The symptoms by which such convulsions may be known are these :—There is spasm throughout the muscular system, the arms and legs are drawn up and agitated, the body drawn back, the eyes are either fixed in their sockets, or are rolled to and fro, the child grinds its teeth, and the countenance is distorted. Sometimes there is a sort of breathing, which resembles greatly the breathing in croup. The first thing to be done is to place the child in a warm bath, to which a handful of mustard or

salt may be advantageously added, and while in the bath to sprinkle cold water upon the head. A clyster should also be administered. After remaining some time in the bath, if the violence of the symptoms is but little mitigated, the child should be removed, and after being wiped dry, the spine should be rubbed with spirits, or hartshorn and oil, and mustard poultices applied to the feet. But whenever there is reason to believe that the convulsions are from teething, the gums should be immediately and freely lanced. A sharp pen-knife will serve perfectly well in this operation, which any one would be able to perform. At times, however, the child is weak and pale, and then, instead of applying leeches or bleeding, a little stimulant medicine should be given, containing two or three drops of laudanum.

When the child has recovered from the fit, it is usual to give a dose of calomel with a little rhubarb, in quantity proportioned to the age.

POISONING.

There are many different kinds of poisons. There is poison in the water we drink, and in which we bathe. But within certain limits, poisonous substances, when properly diluted, may be beneficial, and not injurious. There are poisonous ingredients in the ordinary articles of diet, and some of the best qualities of food contain the most powerful poisons. Flesh, fish, and wheat are the three most digestible and most nutritious of our common alimentary substances, and yet they contain phosphorus—one of the most virulent of poisons.

But beyond certain limits poisonous substances cannot be taken without injury.

Carbonic acid may be breathed for years in moderate doses; but in large quantities, as it is sometimes found in deep wells, it will prove instantly fatal.

Nearly all of our best medicines are poisons, some of them of the most virulent character. In small doses they benefit; in large doses they may work terrible mischief.

The same remarks will apply to stimulants and narcotics, all of which contain more or less poisonous substances. (See *Stimulants and Narcotics*.)

It is not necessary, in a treatise like the present, to enter into particulars relatively to the modes of action of the numerous descriptions of poisons to which the unfortunate who resolve on suicide have recourse, or to which such as are the victims of their own

carelessness or that of others, or even of circumstances purely accidental, are but too often exposed. They are for the most part extremely doubtful, and can serve only, when understood, the members of the profession. Happily, however, the antidotes to the greatest number of poisons are perfectly well known, and it is to their skilful administration that it is most necessary to attend.

Our purpose is to state as clearly and as fully as the nature of the work will admit of, the means of distinguishing the kind of poison swallowed, (where there is doubt upon the subject,) deduced from the symptoms which invariably ensue, in order that the proper antidote may be at once administered.

Poisons are so numerous, that it would be more than absurd to attempt to describe them all; it would be attended with danger, resulting from the confusion in which a person would be thrown from the examination of so much detail. Those only will be mentioned which are the most commonly made use of; and they will be arranged in such a manner, that each respective group will embrace those which have a common train of symptoms, and require similar modes of treatment to counteract their effects.

It must not be supposed, that the descriptions here given of the symptoms of each respective class of poisons, are to be all met with at the same time; for it is with poisoning as with other disordered states of the system, the symptoms are by no means constant; yet, herein, the symptoms, as they will be found grouped, are sufficiently characteristic to lead to the detection of the nature of the poison, when the judgment is not aided by the light of more favorable circumstances.

For the sake, then, of simplicity and of real utility, they will be arranged in the following classes.

1. CONCENTRATED MINERAL ACIDS.

The most common concentrated mineral acids are, Sulphuric Acid, or *Vitriol*; Nitric Acid, or *Aqua fortis*; and Muriatic Acid, or *Spirits of Salts*.

Common Characters of Symptoms.—Astringent taste, with burning heat; acute pain at the entrance and along the course of the gullet, and also at the stomach; an insupportable stench from the breath, nausea, and the abundant vomiting of a liquid, sometimes black, at others reddened with blood, and which effervesces when it falls upon the pavement or upon chalk or whiting; hiccup; sometimes constipation, sometimes stools tinged with blood; acute pain in the belly, extending to the chest; difficulty of breathing; coldness of the feet and hands, and cold sweats; the desire but impossibility

of urinating; the voice altered, and sometimes resembling the sound observable in children who suffer from the croup; the lips and inside of the mouth covered with black or white gangrenous spots.

The following are the more distinctive characters of each of the above poisons;

Vitriol is remarkable for reducing to a black pulp the parts it touches.

Aqua Fortis produces, on the parts it touches, lemon or orange colored spots.

Spirits of Salts disengages thick white fumes of a very penetrating smell.

Oxalic Acid (a vegetable poison) has occasionally been taken through mistake for Epsom Salts, which it strongly resembles in appearance. The treatment for it is the same as for mineral acids.

Treatment.—The patient should be made to drink freely of liquids containing in suspension a quantity of calcined magnesia; or, when the latter cannot be procured, water in which soap is abundantly dissolved; after which may be given linseed or marshmallow tea, or barley-water. These same remedies should also be administered in the form of elysters.

When it is presumed that the acid has been neutralized, and that it has been ejected from the inside, and it is perceived that inflammation has set in, let leeches be applied to the pit of the stomach and to the throat; let warm fomentations be constantly applied to the belly, or very large warm poultices. Should there be cramps or convulsions they ought to be treated by antispasmodics.

2. ALKALIES.

These are usually Potash, Soda, Ammonia (generally in a liquid state, as in the form of hartshorn) and lime.

Common Characters of Symptoms.—The symptoms much resemble those present in cases of poisoning by the mineral acids, but they more particularly affect the throat. The vomited matters, however, do not effervesce upon the pavement, or upon chalk or whiting. The action of ammonia (hartshorn,) is by far the most powerful, giving rise to horrible convulsions.

Treatment.—The patient should be made to swallow, from time to time, a glass of water containing the juice of a lemon or a table-spoonful of vinegar; if neither of these are at hand, warm water should be given abundantly, and vomiting excited by tickling the throat.

If olive oil can be readily obtained, it might be advantageously administered, as it would form a soap, which would be easily got rid of by the last means above described

3. METALLIC POISONS.

Arsenic. White arsenic—yellow arsenic—the *Ague-drop*.

Copper. Blue vitriol—Verdigris—The peculiar poison found where copper coins are put into the pot in which greens are boiling, to give them a bright green color, or when the latter are boiled in copper vessels.

Lead. White lead—Ceruss powder—Goulard's extract or Goulard water—Litharge—Red lead—Sugar of lead.

Antimony. Tartar emetic,—Antimony wine,—James's powders

Silver. Lunar caustic.

Mercury. Corrosive sublimate—Vermilion.

Iron. Green vitriol.

Zinc. White vitriol.

Tin. Salts of tin, used by dyers.

Common Characters of Symptoms. The patient experiences an acrid and metallic taste in the mouth, with a sense of constriction at the throat; pains, at first slight, afterwards most severe, along every part of the digestive canal; nausea, and vomiting of matters which do not effervesce; a continual and ardent thirst; difficulty of urinating; hiccup, difficulty of breathing, and a sensation approaching to that of suffocation; cramps and convulsions; and lastly, the limbs become cold, indicative of approaching dissolution.

Treatment. In all these cases, vomiting is the first thing to be attended to, and should invariably be produced, but before giving fluids to the patient; for these, by dissolving more completely the particles, and spreading them over a wider surface, increase the liability of absorption. There are, however, some of these poisons which require in addition other means; as, for instance, *Antimonial preparations*, which require the administration of an infusion of Peruvian bark, or other astringent barks, or even of common tea, which is a good antidote. If the pains still continue very violent, a grain of opium, or twenty drops of laudanum, may be administered every three hours till they abate; or a table-spoonful of syrup of poppies at the same intervals, mixed with a glass of water.

Lunar caustic requires the frequent administration of a tea-spoonful of table salt in solution.

Arsenic. Drink freely of linseed, marsh-mallow tea, or barley-water, or *dialysed iron* in teaspoonful doses.

For *salts of tin*, the best antidote is milk.

For *corrosive sublimate*, the whites of a dozen eggs should be mixed with two pints of cold water, and a glassful given every two minutes.

For the *preparations of lead*. Epsom or Glauber salts, dissolved

in water in the proportion of a dessert-spoonful to a quart, administered frequently by glassesful. If plaster of Paris is at hand, it should be given, in the absence of salts, mixed with water.

When, however, inflammation has set in, as it most often does, the then *after-treatment* requires the same measures to be employed as those which have been pointed out for the after-treatment of poisoning by mineral acids.

4. VEGETABLE POISONS.

1. Opium or Laudanum, Prussic Acid, Laurel-water, Henbane.

General Character of Symptoms.—Numbness all over the body, with weight and swimming in the head; nausea, vomiting, state of intoxication; swelling of the eyes; slight convulsive movements. The pupil of the eye afterwards becomes greatly dilated, and the patient falls into a torpid state resembling apoplexy.

Treatment.—For prussic acid and laurel-water, tickling the throat or an emetic, to excite vomiting; afterwards, strong coffee, or coffee with a little brandy or turpentine, or hartshorn and water.

For opium or laudanum, and henbane, emetics to excite vomiting, but administered in very small quantities of water; an active purgative elyster, when it is supposed that the poison has reached the bowels.

After the poison has been evacuated, drinks should be given freely acidulated with lemon-juice or vinegar, and then strong coffee. To overcome the numbness of the limbs they should be vigorously rubbed with a flesh-brush or a piece of flannel; and the patient should be constantly moved about, and spoken to, to prevent his sleeping. For opium the best single antidote is *atropine*, in doses of one-thirtieth of a grain and upwards. (See *Atropine*.)

2. Monkshood, Hellebore, Tobacco, Foxglove, Meadow-saffron, Hemlock, Deadly Nightshade.

General Character of Symptoms.—Excited state of the nerves; the patient is greatly agitated and convulsed; there is delirium, the pupil of the eye becomes dilated, and sometimes violently contracts; vomiting, looseness of the bowels, with extreme pain all over the belly. Occasionally there is a great prostration of strength, insensibility, trembling, desire and incapability of vomiting.

Treatment.—The same as in poisoning by opium, &c.

3. Nux Vomica.

General Character of Symptoms.—After the poison has been swallowed, the patient undergoes, alternately, a state of calm and

one of horrible spasmodic contraction of all the muscles of the body. These attacks rarely extend beyond the fifth or sixth, and terminate by death the patient's sufferings.

Treatment.—A vomit; afterwards the following mixture:—A teaspoonful of ether, one of spirits of turpentine, and half a tumblerful of water sweetened with sugar. Give a tablespoonful every seven or eight minutes.

4. Poisonous Mushrooms.

General Character of Symptoms.—Weight and pain at the pit



POISONOUS MUSHROOMS.

of the stomach; then nausea, violent pains in the stomach and bowels, with vomiting and looseness; cramps and convulsions; unquenchable thirst; sometimes delirium, at others, stupor; lastly, faintings and cold sweats.

The symptoms only come on from seven to fourteen hours after the swallowing of the poison.

Treatment.—Active emetics and purgative clysters; afterwards, antispasmodics (the mixture prescribed for poisoning by ratsbane) and water acidulated by vinegar.

5. Ergot of Rye (Blighted rye, Spurred rye).

This is a peculiar excrescence which appears upon the ear, in

the form of a long grain, very slightly curved, three-sided, and pointed at each extremity, of a dark violet color; it is a disease of the corn which appears in wet seasons.

General Character of Symptoms.—An unpleasant tickling or creeping sensation at the palms of the hands and the soles of the feet; heaviness in the head; occasional blindness, delirium, and in-



POISONOUS MUSHROOM.

toxication; spasmodic contraction of the muscles, violent convulsions, and foaming at the mouth; afterwards, violet-colored spots appearing all over the body.

Treatment.—No emetics! Alternate doses of an antispasmodic mixture and water acidulated with vinegar. If gangrene or mortification ensues, the medical practitioner alone can treat it properly.

5. ANIMAL POISONS.

1. Poisonous Mussels.

General Character of Symptoms.—About three or four hours after eating poisonous mussels, an uneasiness is felt all over the body, succeeded by numbness, and afterwards by intense pain at the pit of the stomach, excessive thirst, and continual nausea.

If vomiting do not take place, the belly becomes considerably swollen, the symptoms increase altogether in intensity, and very often a rash appears on the face, which sometimes extends itself over the rest of the body. Lastly, delirium sets in, convulsions, and cold sweats.

Treatment.—Emetics, or the tickling of the throat to induce vomiting; afterwards, cordials, ether, and drinks acidulated with vegetable acids.

2. Spanish flies.

General Character of Symptoms.—These are very remarkable, the poison affecting to a horrible degree the urinary organs and the organs of generation.

Treatment.—Liuseed tea, or other emollient drinks; from 12 to 20 drops of laudanum every four hours; frictions of spirits of camphor all over the body.

CUPPING.

The principal use of cupping will be found in its being a substitute for leeches, when the topical abstraction of blood becomes requisite, and these animals are not at hand. Military, naval, and country physicians are frequently unprovided with the usual instruments, and they resort in such cases to the following means:

They provide themselves with three or four wine-glasses (those which have the stems broken off are the most commodious), or the same number of *small* beer-glasses, a lancet, a little strong spirits, a sponge or some pieces of soft rag, two towels, or a sheet and towel, and a basin of warm water. Whatever glasses be employed, they should be quite level at the edges, in order that they may lie perfectly flat.

To commence the operation, the patient must lay bare the part to be acted on, below which one of the towels or a sheet is to be placed, to protect his clothes or the bed-linen.

Being thus prepared, the operator takes one of the glasses and introduces therein a few drops of ardent spirits, which he allows to spread over the sides; and then, holding it for an instant to the flame of a candle or bit of lighted paper, applies it, whilst the spirit is still inflamed, with the utmost rapidity, and with the mouth of the vessel downwards, flat upon the skin. In a few seconds, in consequence of the vacuum formed in the glass, the parts become

engorged with blood and greatly swollen, the glass remaining firmly fixed by the atmosphere, which presses on it at the rate of 15 lbs. to the square inch of surface which it covers.

The effect of this application may be favored by dashing cold water over the surface of the glass while it is still hot, which causes the little air remaining therein to become more speedily condensed.

As soon as one glass has been applied, the rest should be applied in succession, and in the same manner; and after they have remained on from four to six minutes, or more, to give time for the afflux of blood into the parts, the first glass is to be lifted off, which is readily done by putting the nail under the edge and allowing the entry of the air. The operator then takes the lancet, and makes a number of rapid incisions *into* the skin, but *not quite through* it, if this can be avoided, drawing the lancet from the shoulders to the point. During this part of the operation, an assistant should wipe the glass quite dry; and the operator, introducing into it a few more drops of spirits, applies it as before, first to the flame, and then with rapidity upon the skin. He then proceeds to take off the second glass, scarifies the parts, and re-applies it as before directed; doing the same with the remainder, one only at a time. When the last has been re-applied, the first will be found sufficiently full of blood; this should be emptied of its contents, plunged into warm water to cleanse it, and then wiped and again applied; but the scarifications should be well sponged or cleansed by means of the soft rag, with warm water, to remove the clots. The others are to be treated in succession in the same way; but if, after the removal once or twice of the glasses, enough blood has not been obtained, the parts should be again scarified.

The great secret of good cupping is rapidity in the application of the glasses, and dexterity in placing them quite flat upon the parts; and as regards the scarification, the cutting *into* and *not quite through* the skin, otherwise the fatty tissue beneath enters into the incisions and blocks them up.

When sufficient blood has been obtained, the patient is to be wiped clean, and the scarified parts covered with square pieces of sticking plaster, snipped along the edges to make them lie flat, in number corresponding to the glasses.

Dry cupping—that is, the application of the cups without scarification or drawing of blood—is oftentimes of service. It removes congestion and relieves pain. The “Exhausting Treatment” is simply dry cupping on a large scale.

VACCINATION.

This is an operation which is well known as a preventive of small-pox.

It will be better that the vaccine matter be taken from the human subject. It is generally obtained from the pustule from six to nine days after the operation; it should be transparent, colorless, or of a very light yellowish tinge. It suffices merely to introduce into the pustule the point of the lancet, upon which it will remain for some time without its qualities being at all impaired. It is sometimes kept between little square bits of glass, or in a fine glass tube hermetically closed at both ends; and when destined to be used at a distant period, it is better preserved by these means. However, when about to be employed, it should be rubbed down with the point of a lancet upon a bit of glass, the point being previously dipped in cold water.

The operation is usually performed upon the upper and outer part of the arm. The operator should lay hold of the back and inner part with the left hand, in order to stretch the skin at the place where he intends to operate; then, the lancet being properly furnished at its point with the matter, and straight open, he inserts it flatwise under the cuticle to the extent of about the eighth of an inch, allowing it to remain there for some instants. Three or four other punctures are to be made in the same manner, with this precaution—that they are to be far enough apart to prevent the red circular patches, which ought to surround them when the matter has taken effect, from touching each other. This precaution is so much the more necessary to be observed in infants, as erysipelas not unfrequently arises from this cause.

It is not necessary, and is sometimes dangerous, to vaccinate infants before the age of six weeks or two months. (For remarks on *Re-vaccination*, see *Vaccination* in latter part of book.)

APPLICATION OF LEECHES.

The best leeches are those of a moderate size, which have never been before applied, which have been but recently taken out of water, and which are vigorous and brisk in their movements.

The first thing to be done is to shave off any hairs that may be present on the parts, washing and sponging these parts well with

warm water, and moistening them with a little milk or sugar and water.

In disorders of the eyes they should not be applied immediately upon the lids, but just below the ridge or border which forms the lower part of the orbit; and never, as a general rule, upon the redness of inflamed parts, but as near, however, toward the verge of this as prudently may be.

When they are to be applied over some extent of surface, they should be thrown into a basin of warm water, and then put into a dry square piece of linen, the angles of which are to be drawn up together, so as to form a sort of bag; the warmth thus communicated to them tends to excite them, and render them more apt to bite. Having acquired sufficient energy, which will be seen by the briskness of their movements, the corners of the rag, which rests upon the palm of the hand, are to be thrown back, and the whole reversed upon the part where it is intended they should take. They should be kept in place either by means of a glass applied over rag and all, or merely the hand, which should be stretched out so as only to rest upon the borders. Or they may be placed in the cover of a small pill-box, and applied.

But when they are to be applied upon those parts where they can only be directed one by one, the best plan is to procure a small card, and roll it up so as to leave two openings; the one large enough to admit the whole body, the other very small—just large enough, in short, to give passage to the head; the animal being then introduced, the head downwards, the small end is to be applied to the proper spot, and the other closed by means of the pulp of one of the fingers; when it has adhered, this funnel-shaped card may be loosened and withdrawn, and reconstructed for the rest.

There are three ways of encouraging the bleeding: the first is by the application of a cupping-glass, a method only employed by practitioners; the second by bathing the bleeding orifices, left by the leeches, with warm water; the third by the application of poultices, which are best made of linseed meal.

When leeches are to be applied to the chest, stomach, or bowels, it is advisable to fold a sheet three or four times long-wise, and lay it across the bed, under the patient, before commencing the application of the leeches; during which time a second person should be engaged in preparing a large linseed-meal poultice, to be applied as soon as the leeches have fallen or been taken off. The ends of the folded sheet should then be lifted up, lapped over the whole, and secured with pins; and in this way the soiling of the patient's dress and bed-linen will be totally prevented.

QUACKERY.

I SHALL not attempt to define quackery. The meaning of the word is sufficiently clear, and is well understood.

In our country, quackery of all kinds has been exceedingly popular, and is so at the present time. Its popularity is not confined to the ignorant and uneducated. Many of our best cultured minds—our leading clergymen, lawyers, men of letters, and men of business—prefer quacks for their medical advisers to regularly educated, scientific, and honorable men.

Our *clairvoyants*, our *astrologers*, our *chiromancers*, and all of our ignorant, unscrupulous charlatans and empirics, by whatever name they may be called, are patronized by men who, in other matters, are both intelligent and conscientious.

This inconsistent and wicked conduct on the part of men and women who profess better things may be thus partly explained:

1. *An innate love of being humbugged.*—There are very many in society who delight in humbuggery of all kinds. They dislike whatever is stable, judicious, open, and true, and readily fall in love with whatever is ridiculous, mysterious, secret and false. With some this love of quackery becomes a disease, and may properly be termed *quackomania*. Such persons, when they leave their homes and go to any large capital for medical advice, usually avoid the scientific and responsible and conscientious physicians, and seek out the most ignorant, the most vulgar, the most degraded, the most unscrupulous charlatans that they can find, and allow themselves to be fleeced of their money, cheated of their health, and perhaps of their lives. Clergymen, and conscientious Christian people of the very best orders of society, who would rather bury a child than allow it to go to a theatre or attend a heretical church, yet intrust the lives of themselves and their children to the vilest criminals that an imperfect legislation ever suffered to roam at large. Men who would never sleep in a hotel where liquor is sold, cheerfully patronize the jail-birds and pickpockets who advertise themselves as physicians and surgeons.

2. *The erroneous impression that quacks are more progressive, more informed, and more successful than regularly educated physicians.*—I admit that the profession has not always been as liberal as could be desired, but the advanced men among us now eagerly seize hold of every remedy that promises relief for their patients. They take pains to inquire into all new plans, methods, and systems of cure, even when they are in the hands of comparatively ignorant men. It is a

fact which the people should understand, that nearly all of the progress made in science is made by scientific men, and not by quacks. Quacks simply borrow from the writings and teachings of physicians. They appropriate the ideas of others, call them original, and thus delude the people. Quacks undoubtedly stumble on some excellent methods of treating disease, but the profession *know all that they know, and vastly more.*

The great objection to quacks is, that they are not usually conscientious. People who know nothing of medical science should intrust health and life *only to those who are faithful, reliable, and conscientious, as well as skilful.*

Quackery is not a new delusion. The world has always loved it.

From Pettigrew's work I make the following suggestive extracts :—

“Grose, from a MS. in the Cotton Library (Julius F. 6), tells us that ‘between the towns of Alton and Newton, near the foot of Rosberrye Toppinge, there is a well dedicated to St. Oswald.

“‘The neighbors have an opinion that a shirt taken off a sick person and thrown into that well will show whether the person will recover or die—for if it floated it denoted the recovery of the party, if it sunk, there remained no hope of their life; and to reward the saint for his intelligence they *tear off a rag of the shirt and leave it hanging on the briers thereabouts*, where,’ says the writer, ‘I have seen such numbers as might have made a fayre rhyme in a paper-myll.’

“Fabian Withers, speaking of physicians, declares :—

“‘So far are they distant from the true knowledge of physic which are ignorant of astrology, that they ought not rightly to be called physicians, but deceivers; for it hath,’ says he, ‘been many times experimented and proved, that that which many physicians could not cure or remedy with their greatest and strongest medicines, the astronomer hath brought to pass with one simple herb, by observing the moving of the signs.’ The virtues of herbs were considered to be according to the influence of the planet under which they were sown or gathered. Black hellebore was to be plucked, not cut, and this with the right hand, which was then to be covered with a portion of the robe, and secretly conveyed to the left hand. The person gathering it was also to be clad in white, to be barefooted, and to offer a sacrifice of bread and wine. Verbena or vervain was to be gathered at the rising of the dog-star, when neither sun nor moon shone, an expiatory sacrifice of fruit and honey having been previously offered to the earth. Hence arose its power to

render the possessor invulnerable, to cure fevers, to eradicate poison, and to conciliate friendship. The mistletoe was to be cut with a golden knife, and when the moon should be only six days old."

"A belief in the philosopher's stone lasted for a very long period, and the memory of several eminent men is chargeable with the folly. Lord Bacon speculated upon it, and Sir Isaac Newton is said once to have entertained the possibility of finding it, and also to have acknowledged that the idle and vain pursuit of astrology had led him to cultivate astronomy.

"The sons of chymistry,' says Lord Bacon, 'while they are busy seeking the hidden gold, whether real or not, have, by turning over and trying, brought much profit and convenience to mankind.'

"It has been remarked as singular, that among the vulgar errors exposed by Sir Thomas Browne in his '*Pseudodoxia Epidemica*,' there should be no mention made of the royal gift of healing; but from a case related in the '*Adenochoiradologie*,' it would seem that this eccentric but able man (who, it will be recollected, received the honor of knighthood from Charles II.) had himself faith in the touch, inasmuch as he recommended the child of a nonconformist in Norfolk, who had been long under his care without receiving benefit, to be taken to the king, then at Breda or Bruges. Little faith, however, being held by the father of the child as to the efficacy of such intervention, he scorned the advice, and the child was therefore, under the pretence of a change of air, taken without the privity of the father abroad to the king, where it was submitted to the royal touch, and returned perfectly healed. Astonished at the change effected in his child's appearance, the father inquired as to the means that had been employed, and upon being made acquainted with them he not only acquired faith as to the power of the royal touch, but also cast off his nonconformity, exclaiming, 'Farewell to all dissenters and to all nonconformists. If God can put so much virtue into the king's hand so to heal my child, I'll serve that God and that king so long as I live, and with all thankfulness.'

"Professor Woodhouse, in a letter to Dr. Whitehill, of New York, has given a recital, which also tends to show what singular effects can be caused if the imagination be previously and duly prepared for the production of wonders. At the time that nitrous oxide excited almost universal attention, several persons were exceedingly anxious to breathe the gas, and the professor administered to them ten gallons of atmospherical air, in doses of from four to six quarts. Impressed with the idea that they were inhaling the nitrous oxide, quickness of the pulse, dizziness, vertigo, tinnitus aurium, difficulty of breathing, a sensation similar to that of swinging, faintness,

weakness of the knees, and nausea, which lasted from six to eight hours, were produced—symptoms entirely caused by the breathing of common air, under the influence of an excited imagination.”

In regard to quackery this one fact must be conceded, that there is no method of treatment so *absurd that it may not in some cases perform remarkable cures*.

The story of Perkins's *tractors* is familiar to many now living. Perkins made his tractors of *metal* of different colors, and by touching the patient with them cured many diseases. A physician of England made some tractors of *wood*, resembling those of Perkins in appearance and color. With these he performed the same cure as Perkins had done with his metallic tractors. The delusion was dispelled, and the tractors soon fell into disrepute.

PATENT MEDICINES.

In this country enormous fortunes have been and are now being made by the manufacture and sale of patent medicines. I would not say that for every dollar that has been made by these preparations some valuable life has been sacrificed, but I do say that many of these work most serious harm.

I would not say that all of these preparations are always and necessarily injurious; for it is perfectly well known among physicians that some very simple, and, when used with discrimination, very useful prescriptions are patented under popular titles, and sold in enormous quantities.

Thousands of people are every day buying, at a high price, some combination of drugs, labelled with some euphonious name, which their family physician could give them by a stroke of the pen, or which they themselves might oftentimes obtain of the druggist, or even at the corner grocery.

The great objections to the use of these really useful or harmless patent medicines are these two:—

1. They are given indiscriminately, without regard to the nature of the disease. A wise physician does not usually give medicine until he has some conception of the purpose for which he gives it. A medicine that is in itself harmless in ordinary conditions of the system, may be injurious in some conditions of the system.

2. *To use these medicines is to encourage quackery.* If all people

everywhere refused to buy or to use patent medicines, the health and the morals of society would be much improved.

I need not give any reasons why I object to the use of patent medicines that contain substances that are injurious. The very fact that they contain injurious substances in injurious quantities is all the argument that need be urged against them.

Just here it is proper for me to remark, that the common idea that *vegetable* poisons are less pernicious and fatal than *mineral* poisons is erroneous, and leads to great mischief. This idea arose from the fact that in former times many have been injured by the abuse of mercury in some of its forms. Mercury is indeed a poison, and when abused may work sad havoc with the constitution; but there are very many *vegetable* poisons which are far more speedily, and terribly, and surely fatal than mercury. Prussic acid is a vegetable poison, but it can kill almost instantaneously; *nicotin* of tobacco is a vegetable product, but a drop of it will kill a dog or cat. Strychnine is a vegetable poison, and is so powerful, that when long used as a medicine its effects must be always watched.

Venders of quack medicine have seized hold of this popular prejudice against minerals, and advertise their preparations as containing "no minerals"—as being purely vegetable.

It is proper that their victims should know that many of these statements are utterly false; and even when they are true, when the medicine advertised is of a purely vegetable character, it does not follow that it is harmless.

(For further remarks and illustrations of this subject, see *Hair, Diseases of; Hair Dyes, and Cosmetics.*)

ACTION OF MIND ON BODY.

The action of the mind on the body in health and in disease is a subject of the highest interest and importance, but scientific men are only just beginning to study it. There is not here space to do anything more than call attention to these points.

1. The success of charlatans of various kinds, clairvoyants, and so forth, is largely due to the fact that the patients have great faith in them, and so cure themselves unconsciously through mind acting on the body, and bringing about the results they expect. This is the answer to those who report the great cures wrought by ignorant pretenders, and absurd methods of treatment.

2. Modern Delusions—as Animal Magnetism, Spiritualism, Clairvoyance and Mind Reading, owe their strength and popularity to the fact that people do not understand the physiology of the mind and its relations to the body. The subject, however, is now

sufficiently understood by experts in this department to explain in full detail all that is really accomplished by Mesmerizers, Mediums, Second Sight performers, and Mind Readers. The subject can only be studied successfully by specialists, who must give years to the investigation.

A few years ago I made a systematic series of experiments in one of the public institutions of New York, in order to determine, as accurately as possible, how far it is possible to cure disease by mental influence alone.

In these experiments, which were kept up for many weeks, no medicine of any *real* value was used, but simply what are called *placebos*, to act upon the minds of the patients, and induce them to believe that they were taking or doing something that would surely cure them. A favorite device was to tell the patients that they would get well on a certain day and hour. I would say, "Take this, and you will be well on Thursday afternoon at three o'clock." "Take a drop of this mixture just as you are, half through dinner, and in half an hour your pain will leave you." In the majority of the cases—though not, of course, in all—these predictions were literally fulfilled. The patients did get well on the time appointed, and many and profuse were the thanks that I received for my success.

In these experiments were proved absolutely, and beyond all question, that it was possible to relieve in this way, not only imaginary functional troubles, but also genuine and organic diseases, although the results were more certain and more permanent in functional than in organic disease. It had previously been denied by physicians that organic diseases could be affected through the mind.

What astonished me most was the permanency of the cures in many of the cases. They not only got better, but they kept better, and, in some instances, recovered entirely. I call this treatment *mental therapeutics*.

When the reports of these experiments are published in detail, it will be seen that there is no mystery about the great success of traveling pretenders, or of many unscientific systems of treatment. *What patients confidently expect to happen will be very likely to happen.*

Diseases may be *brought on* as well as cured by mental influence. In great epidemics, like cholera and yellow fever, many are scared into the symptoms, and, when attacked, are made worse by worry, and oftentimes die, when, so far as can be seen, they might live. I have, in a number of instances, seen negroes die from various forms of disease when there was not the slightest necessity of their so doing.

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TO THE WANTS OF THE HOUSEHOLD.

BY
GEORGE M. BEARD, A.M., M.D.,
ASSISTED BY A CORPS OF EMINENT MEDICAL AUTHORITIES.

WITH NUMEROUS ILLUSTRATIONS.

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GENERAL DESCRIPTION OF DISEASES,

AND THE MOST RECENT AND RELIABLE

METHODS OF TREATMENT,

IN POPULAR LANGUAGE, ALPHABETICALLY ARRANGED, WITH
BRIEF ACCOUNTS OF THE MODERN DISCOVERIES IN
MEDICAL SCIENCE.

NOTE.—The Doses and Medicines herein prescribed are according to the *common formula*. The more recent, convenient, and accurate method, the metric system, is also given. (See Doses.)

NOTE.—For medical subjects and terms not found in their alphabetical order, see Medical Dictionary (Glossary), also Index.

ABDOMEN, DROPSY OF THE. (See Dropsy.)

ABNORMAL GROWTH OF HAIR. (See Hair, also Plate 10.)

ABORTION. (See Miscarriage.)

ABSCESS.

An abscess is a collection of matter, or *pus*, in some part of the body, invariably caused by previous inflammation. Abscesses are generally situated in the cellular structure or tissue, and they form more frequently in that structure near the surface than where it is deep-seated; the same structure or tissue also enters into the formation of all the internal organs liable to abscess.

An abscess is either *acute* or *chronic*.

ACUTE ABSCESS.

Symptoms.—When acute inflammation is about to terminate in abscess, the pain, which was previously sharp, becomes dull, the swelling is increased, and throbbing of the part commences. When the matter is completely formed, the part becomes softer,

with an uneasy feeling of weight, the throbbing ceases, and, if the matter be not too deeply seated, we may feel it fluctuating by pressing with the fingers. At the same time the feverish symptoms, which existed during the inflammatory stage, lessen, and rigors or shiverings take place at intervals; they are felt principally in the back and loins. The tumor at length begins to *point* at or near the middle of its surface. The skin at this part gradually becomes thinner, ultimately gives way, and the matter is freely discharged.

Treatment.—*Acute Abscess.*—When inflammation of a part is going on, threatening abscess, our object must be to prevent this termination, if possible. But if maturation cannot be prevented by the usual means—viz., low diet, keeping the bowels freely open, the liberal use of leeches, and the constant application of cold lotions to the part, such as *Goulard water*, vinegar and water, etc.—recourse should then be had to the soothing treatment, which consists of warm applications, as fomentations of marshmallow, and large poultices of bread and milk, or linseed; these are to be changed frequently, so as to keep up a due degree of heat and moisture, all stimulating applications being carefully avoided. Internally, the following mixture, recommended by Sir Astley Cooper, should be administered:

Solution of acetate of ammonia, 6 ounces (or 192 grams),
Epsom salts, 1 ounce (or 32 grams),
Laudanum, 60 drops (or 2 grams). Mix.

DOSE.—Three or four table-spoonfuls three times a day. Half a grain (or three centigrams) of *acetate of morphia* may be substituted for the laudanum.

When the abscess has gone through its stages regularly and begins to *point*, it should be left to burst of itself; but, if the matter be confined under the membrane which envelops the muscles, or if the skin be very thick and unyielding, it will be necessary to make a free opening with the lancet.

CHRONIC ABSCESS.

Symptoms.—Chronic abscess is frequently situated in the lymphatic glands, as well as in the cellular tissue. It forms slowly. The tumor is round, without redness or heat of skin, and does not offer much resistance when pressed upon. The pain, if any exist, is comparatively slight, but there is an uneasy sensation of tension and weight. After remaining a longer or shorter period in this state, the pain becomes a little increased, a slight degree of redness may be observed on the tumor, and softening commences at its

centre, gradually extending throughout. The inflammation then goes on until the skin bursts, and allows the matter to be expelled.

The matter of acute abscess is a bland fluid, thick, white, and without smell. This is called *healthy pus*; but sometimes, when long confined, it becomes thin, fetid, and acquires a grayish color. In chronic abscesses the matter varies in consistence. It is generally serous, containing little flaky or curdy masses, which have in some cases the consistence of cheese, and the smell is disagreeable; this, in contradistinction to the former, is called *unhealthy pus*.

Treatment.—*Chronic Abscess.*—The treatment of chronic abscess is very different from that of acute. In this case the diet must be generous, and tonic medicine should be administered to give strength to the constitution.

Sulphate of quinine, 40 grains (or 2.50 grams).

Extract of gentian, a sufficient quantity to form a mass, to be divided into twenty pills.

DOSE.—One to be taken twice or three times a day.

Cold stimulating poultices should be applied over the part. The one generally used is made by dissolving a table-spoonful of common salt in a pint of water, and mixing it with oatmeal or flour. If the case be very tedious, a *compound galbanum plaster* may be applied. This form of abscess will also require the lancet if the matter be deeply seated, or under the muscular covering, so as to prevent its spreading among the muscles; and, as a general rule, all abscesses, whether acute or chronic, situated in the arm-pit, near the anus, in the groin or neck, should be opened early, in order to prevent the matter from accumulating and extending in the cellular tissue. When it is found necessary to use the lancet, a free opening should be made in the most depending part of the abscess, and a piece of lint smeared with olive oil or spermaceti ointment placed in the wound, to prevent its closing before the cavity has healed up from the bottom.

If the abscess has been extensive, a roller or bandage should be applied, so as to bring the sides of the cavity together without covering the mouth of the wound. Whether the matter has been discharged through an opening made by the lancet, or from the spontaneous bursting of the abscess, it will be necessary to continue the poultices for some time after.

In people of scrofulous constitution, the absorbent glands of the neck not unfrequently become enlarged and hard without being discolored or painful, though there is generally tenderness on pressure.

These glandular swellings, for the most part, come on slowly, remain for a considerable length of time, perhaps weeks or months, and occasionally disappear of themselves without any treatment. But in general, after they have continued for some time in this indolent state, matter begins to form, the skin over the enlarged gland acquires a reddish tint, and there is pain either more or less severe. Warm poultices, and sometimes stimulating applications, are then made use of by those who are ignorant of the means which ought to be adopted in such cases ; after a time the skin assumes a livid or purplish color, and at last bursts, and the matter is discharged. A considerable portion of the dark-colored skin is lost by sloughing, and an ugly ulcer forms, which is healed with difficulty, leaving an indelible scar which remains for life. In a boy a scar in the neck is kept out of sight, being covered by the dress, and is, therefore, of no great consequence ; but to a girl it is of the utmost importance, for when arrived at womanhood it must be a source of deep regret to bear scars not only offensive to the sight, but which point her out as tainted with scrofula, or *king's evil*, a disease that has always been considered as more decidedly hereditary than perhaps any other.

Food difficult of digestion, or of a stimulating quality, should not be given, but the diet should be sufficiently nutritious, and not confined to vegetable or farinaceous substances. When a slight blush or degree of redness is observed on the skin covering the part, and when matter can be distinctly felt on pressing with the fingers, vent should be immediately given to it. The opening should be made transversely with a lancet, or a fine double-edged knife, and the greatest care must be taken to squeeze out all the peculiar curdy matter which these abscesses almost invariably contain. By making the wound transversely, it follows the course of the folds or creases of the neck, or runs parallel with them, and consequently when healed the scar will scarcely, if at all, be observed.

After the matter has been discharged, bread poultices mixed with either of the following cold lotions should be applied.

Sulphate of zinc, 20 grains (or 1.25 grams),
Water, 10 ounces (or 320 grams),
Spirit of wine, half an ounce (or 16 grams). Mix.

Another—

Nitric acid, 20 drops,
Distilled water or common water, a pint. Mix.

The strength of these lotions must be gradually increased, but not made so strong as to produce pain.

If the wound do not heal readily, which is sometimes the case, the best plan is to inject a little of the following lotion with a syringe every time it is dressed :

Water, a pint (or 512 grams).
Sulphate of zinc, 20 to 25 grains (or 1.25 to 1.56 grams). Mix.

Or the following :

Carbolic acid, 10 drops,
Water, 1 ounce (or 32 grams). Mix.

If the odor is bad, inject the following :

Permanganate of potash, 1 ounce (or 32 grams),
Water, 1 pint (or 512 grams). Mix.

The time to make the opening, as has been already stated, is when the matter can be felt on pressure with the fingers ; the skin covering the tumor will then in all probability have a slight appearance of redness ; but if this stage of the abscess has not been taken advantage of, and suppuration has been allowed to go on until the skin has acquired a livid or purple color, the use of the knife will then do no good ; it will be better to apply fomentations and warm poultices until the abscess bursts of itself.

The time required for the formation of an abscess varies according to its situation and the constitution of the patient. Matter generally begins to form from seven to fourteen days after the commencement of inflammation, and an acute abscess usually runs its course in about three weeks. A lumbar or psoas abscess, or any other extensive chronic abscess, requires a much longer period, sometimes several months. In chronic abscesses the patient will need to be supported by stimulants and tonics and good food.

The sulphides of potassium, sodium, and calcium have been used by Dr. Ringer as a preventive and curative of indolent abscesses. Thus :

Sulphide of calcium, one tenth of a grain (or .006 grams),
Sugar of milk, one half teaspoonful (or 2 grams).

Make one powder. Of these take four a day.

ABSORBENTS.

In various diseases associated with bad assimilation and nutrition the absorbent glands are liable to be disordered. (See page 126.)

ACARUS SCABEL. The itch insect. (See Skin, Diseases of, Plate VII.)

ACHOLIA. Deficiency of bile. (See Liver, Diseases of.)

ACNE—PIMPLES—BLACKHEADS.

This is a very common affection and quite annoying, as it usually occurs upon the face of young people. (See Plate V.)

Symptoms.—The sebaceous glands of the cheeks and forehead become inflamed and form unsightly blotches and small mattery pimples, which disappear in a few days or weeks, but only to give place to others. The affection is frequently seen upon the shoulders and back. Mingled with the red pimples and pustules numerous black specks are commonly seen, sometimes looking as though grains of powder had been blown into the skin. These indicate the openings of the sebaceous glands, which are numerous in the skin of the face, and particularly well developed upon the sides of the nose. The fatty matter secreted by these glands accumulates, the ducts become distended by plugs of sebaceous matter or “grubs,” as they are sometimes called, and the dust and dirt which collect upon their free extremities produce the specks or “black-heads.”

These are not worms, as many are led to imagine from their shape and appearance when pressed out of the skin, but in certain cases the microscope reveals a small, harmless parasite imbedded in the sebaceous accumulation.

In middle life a disease frequently occurs upon the nose and cheeks, which is characterized by marked redness, and is called *Acne rosacea*. (See *Rosacea*.)

Treatment.—Acne does not yield readily to treatment, although it may disappear in some cases without any treatment whatever, as the young person grows older. In some cases local applications will effect a cure, but it is generally necessary to modify the diet and to adopt means to improve the digestion and equalize the circulation of the blood. The flushing of the face at times, especially after eating a full meal, drinking hot liquids, or entering a warm room, is at the



PIMPLES (*Acne*)
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root of the trouble, and gives rise to the successive crops of pimples. The bowels should be kept free by some gentle laxative, say a glass or two of mineral water, combined with an early morning walk, and pepsin may be taken with the meals if the digestion is impaired. The face should be washed with soap when the skin is greasy, and the comedos or “blackheads” repeatedly pressed out. This can be accomplished by use of a watch-key (in place of the thumb-nails), or, what is still better, a small silver tube made for the purpose by instrument-makers. To lessen the redness which follows this procedure, the face may be bathed with a mixture of vinegar and hot water. At night a mild sulphur ointment may be applied to the face and washed off in the morning with Indian meal or the following lotion :

Bay rum, 1 part,
Rose water, 2 parts.

ADDISON'S DISEASE, OR BRONZED SKIN.

In this not very common disorder the so-called supra-renal capsules—on the top of the kidneys—are diseased.

The best known symptom is a bronze color of the skin. Other symptoms are general exhaustion, loss of appetite, constipation, fitful sleep, dry and parched mouth and throat and dryness of all the secretions. The nails may be brittle so as to be easily broken. The sexual power and desire may be utterly lost. This disease is incurable, but is fortunately rare.

AGUE—CHILLS AND FEVER—MALARIAL OR INTERMITTENT FEVER.

Ague generally declares itself under three regular forms—namely, the *quotidian*, *tertian*, and *quartan*.

The *quotidian* form has an interval of twenty-four hours, and the fit usually commences in the morning. This type of ague is not so common as the other two, and occurs generally in spring.

The *tertian* has an interval of forty-eight hours, the fit occurring about noon. This is the most common form, and prevails also in spring.

The *quartan* has an interval of seventy-two hours, commencing in the afternoon. This form prevails in autumn, and is the most difficult to overcome.

It must not be supposed that these forms of ague commence in-

variably at certain periods of the day ; they may commence at any hour ; the periods we have mentioned, however, are the most usual.

Symptoms.—Each paroxysm or fit of intermittent fever has three well-marked stages—a *cold*, a *hot*, and a *sweating stage*.

The *cold stage* is ushered in by the following train of symptoms : languor, listlessness, general uneasiness, with depression of spirits, aversion to food, a feeling of soreness on the back and extremities. The face and extremities then become pale, and a cold sensation is felt in the back and loins, gradually extending over the whole body, until decided shivering takes place ; the lips and nails assume a livid hue, the teeth chatter, the skin presents the appearance of what is vulgarly called *goose's skin*, respiration becomes oppressed, the pulse is weak, the mouth and throat dry, all the secretions are diminished, and the patient sometimes vomits.

The *hot stage*.—After a longer or shorter duration, the shaking gradually goes off, the heat of the body returning, until it goes far beyond the natural standard. The skin then becomes dry, the face flushed, the pulse full and hard, the tongue furred, and the breathing, which was considerably affected during the cold stage, becomes easier. There is great thirst, severe headache and restlessness. The urine, which in the first stage was pale, is now high-colored ; the sensibility, previously more obtuse than natural, is now increased ; the eyes have a bright and glistening appearance, and sometimes delirium comes on.

The *sweating stage*.—The hot stage having continued an indefinite time, a slight degree of moisture is at length observed on the forehead and neck ; this gradually extends to the trunk and extremities, and terminates in profuse perspiration, which relieves the patient from his suffering. He is left, it is true, with a feeling of fatigue ; but the appetite returns, all the secretions again become natural, and he is able to follow his usual occupation until the commencement of another fit.

The quotidian has the shortest cold stage, but the longest paroxysm or period required for the completion of the three stages ; the tertian has a long cold stage, but a short paroxysm ; and the quartan has the longest cold stage and the shortest paroxysm.

The usual duration of the quotidian paroxysm is from twelve to fifteen hours, of the tertian ten hours, and the quartan form commonly completes its stages in six or seven hours. These rules, however, admit of many exceptions.

When the disease is giving way, the fits become milder, and gradually later, until at length the ague is no longer felt ; but when it is increasing, the fits become more severe, and gradually

return earlier, so that it is not unusual for the tertian form to become quotidian, and the quotidian to assume the remittent type of fever.

In one case that I successfully treated, *temporary paralysis of half the body* was one of the symptoms.

DUMB AGUE.

In so-called dumb ague all the above-described stages do not appear, at least in the regular order. There may be a sense of chilliness, or of warmth, or of uneasiness, but not the well-defined cold, hot, and sweating stages. Those who have malaria in their system are liable to attacks of dumb ague whenever they take cold.

Causes.—The exciting or specific cause of ague is undoubtedly *malaria*, or the exhalation from decaying vegetable matter. In some parts of Italy, during the excessive heat of summer, the *malaria* becomes so noxious that it causes ague of a pernicious or malignant character, the patient sometimes being carried off in the second or third fit. The most deleterious effects of *malaria*, whether derived from decaying vegetable matter or not, can only be manifested under a high temperature; it then acquires a virulence truly extraordinary.

Ague is certainly very apt to relapse, and slight causes, such as exposure to cold and moisture, errors in diet, certain winds, such as the north-east, etc., will bring it back after an absence of months, or even years. Individuals whose general health is not good are more liable to be acted on by *malaria* than those in robust health. Poor diet, fatigue, debauchery, or any other debilitating cause, by enfeebling the powers of life, predispose the body strongly to ague, when exposed to the influence of *malaria*.

Ague or malaria is very common in this country, especially in the South and West, but even in New York and New England it is a common and serious evil.

In those districts where malaria abounds it is liable to affect more or less nearly every family, and it modifies all or nearly all other diseases so that they become periodic. Thus neuralgia in a malarial district is apt to come on at a definite hour in the day. The worst time for malaria is the autumn—the months of August, September, October, and November. The attacks may come on during the winter, and, indeed, more or less all the year.

Treatment.—In the treatment of ague we have two objects in view—the one to alleviate and shorten the fits, the other to prevent their return.

Treatment during the fit.—In the *cold stage* it will readily occur to every one to cover the patient with blankets or other warm clothing, and to administer warm drinks. The quantity of bed-clothes is to be diminished, and the patient should be allowed to drink freely of cold water or cold acidulated liquids, such as cream-of-tartar, or tamarind beverage, or lemonade, with the addition of twenty or thirty grains of nitre. The cream-of-tartar beverage is made in the following manner :

To three pints (1536 grams) of boiling water add
Four ounces (128 grams) of refined sugar,
Half an ounce (16 grams) of cream-of-tartar, and
Three drachms (12 grams) of orange-peel, or an orange cut in slices.

Sweating stage.—In this stage medicine is not requisite. We have merely to take care that the body is not chilled when the patient's clothes are being changed.

Treatment during the intermission.—It is only during the intervals or periods between the fits that we can expect to effect a cure. We then have recourse to *Peruvian bark* or the *sulphate of quinine*, which are possessed of almost a specific property in preventing the return of the fits, and may be considered as our sheet-anchor in all the forms of ague. The dose of bark in powder is from a drachm to two drachms (or 4 to 8 grams) every three or four hours, so as to allow nearly two ounces (or 64 grams) to be taken during each intermission. The concentrated form of sulphate of quinine is much preferable, and should be given in the following manner :

Sulphate of quinine, twenty-four grains (or 1.50 grams).

Extract of gentian, a sufficient quantity to make a mass to be formed into twelve pills.

DOSE.—One pill three or four times a day, commencing immediately after the sweating stage, or two grains (or 0.12 grams) of quinine may be given in place of each pill, in a little port-wine and water, care being taken to continue this medicine for some time after the disease appears cured. The power possessed by quinine in overcoming ague is truly extraordinary, and must ever be considered as one of the most curious facts in medicine. It does not, however, produce the desired effect in all cases, and when it fails we have reason to suspect that the ague is kept up by some organic derangement of the bowels, lungs, liver, spleen, etc. If there be

disease of any organ, it is aggravated during the fit, in consequence of the increased determination of blood to the part, causing congestion ; and during the intermission the affected organ keeps up constantly a greater or less degree of irritation in the system, and thereby prevents the quinine acting as it otherwise would do.

In such cases, when quinine is obstinately resisted, the *arsenical solution*, or *Fowler's solution*, which is the most powerful anti-periodic remedy we possess next to quinine, may be found of the greatest advantage. The dose to commence with should be as follows :

Fowler's solution of arsenic, three drops.

Water, an ounce (or 32 grams). Mix. To be given after meals, gradually increasing the dose of the solution to eight or ten drops, according as the stomach will bear it.

It should not be given before breakfast, or on an empty stomach. If carefully watched, there is no danger whatever in using the arsenical solution, and it frequently cures ague when quinine fails. If it produce griping of the bowels or sickness at stomach the dose should be diminished.

The bowels must never be allowed to remain constipated at any period of the disease. Sometimes a good dose of physic is excellent before the other remedies are used.

It is only during the intermission that food should be taken, and as ague is almost invariably attended with debility, the diet ought to be light, nourishing, and of sufficient quantity.

General Faradization has been found very efficacious in the chronic exhaustion resulting from ague. (See Electro-Therapeutics.)

Recently, various substitutes for quinine have been used with success—as *chinoidine*, *cinchonidia*, *quinetum*, *phloridzine*, and *salicine*.

Chinoidine is given in doses of from two to ten grains (12 to 60 centigrams); it sometimes loosens the bowels, especially when first taken.

Cinchonidia is given in about the same doses as quinine. *Cinchonidia* does not cause the dizziness, vertigo, fulness of the head, and temporary deafness that are produced by large doses of quinine.

Phloridzine—the active principle of the *apple-tree bark*—is given in doses of from five to fifteen grains before each meal ; it certainly cures in cases where quinine fails. At present it is but

little known. For *chronic chills* the following combination is excellent :

Sulphate of quinine, 2 drachms (or 8 grams),
 Reduced iron, $1\frac{1}{2}$ drachms (or 6 grams),
 Extract of aconite, 30 grains (or 1.87 grams),
 Sulphate of morphine, 2 grains (or 0.12 grams),
 Sulphate of strychnine, 2 grains (or 0.12 grams),
 Arsenious acid, 2 grains (or 0.12 grams).

Mix, and make sixty pills. Take one after each meal.

To keep the chills from returning after they are once broken up, use the following :

Sulphate of quinine, $10\frac{1}{2}$ drachms (or 42 grams),
 Muriacic tincture of iron, $1\frac{1}{2}$ ounces (or 48 grams),
 Laudanum, 2 drachms (or 8 grams),
 Fowler's solution, 1 ounce (or 32 grams),
 Strychnine, 2 grains (or 0.12 grams),
 Alcohol, 7 ounces (or 224 grams),
 Water, 30 ounces (or 960 grams). Mix.

Dose.—One table-spoonful three times a day.

Another ingredient in preparation for ague is *sulphate of zinc*, which may be combined with quinine and capsicum, as follows :

Sulphate of zinc, half a drachm (or 2 grams),
 Sulphate of quinine, 1 drachm (or 4 grams),
 Capsicum, 1 scruple (or 1.25 grams),
 Blue mass, 1 scruple (or 1.25 grams). Mix.

Make sixty pills. Take one before each meal.

Salicine is given in doses of from twenty to forty grains (1.25 to 1.50 grams), four times daily.

Treatment of Congestive Chills.—When chills assume the *congestive* form so often fatal and so much dreaded, they should be treated with *opium* and *chloroform*, as in the following prescription :

Powdered opium, 10 grains (or 0.62 grams),
 Powdered capsicum, 1 scruple (or 1.25 grams).

Make ten powders. Take one powder every hour.

Chloroform is used by inhalation (see Anesthesia). After the circulation is re-established, then give large doses of *quinine* by the stomach, or inject them into the rectum.

Prevention.—To prevent ague, one should take coffee before rising, or at least before leaving the house ; filter or boil the water

used for drinking, and have good fires in the morning and evening. It has lately been claimed that the Australian blue gum-tree (*Eucalyptus globulus*) is a preventive of ague. Time and a larger experience, however, must determine this question.

The famous Warburg's tincture is now used in this country, and it succeeds where quinine does little good. A single dose sometimes breaks up an attack.

Ague is sometimes treated with *hypodermic* injections of quinine, and has some advantages over administration by the mouth. The following formula has been recommended for this purpose :

Quinine, 7 grains (or 42 centigrams),
Sulphuric ether, 15 drops. Mix.

In my own experience South, I found that in some obstinate, long-standing cases of malaria a free use of *lemons* was of great service. I advise such patients to eat lemons just as they would eat oranges. One case in particular I remember where the treatment succeeded after quinine had abjectly failed. The acid of the lemons undoubtedly acts on the stomach and liver, which are so apt to be disordered in chronic malaria.

Gelsemin is one of the most efficacious of all the substitutes for quinine, but unfortunately it is a remedy that sometimes produces bad effects, and therefore must be used cautiously.

DOSE.—From five to ten drops of the tincture. Do not repeat for five hours. Stop when the pupil of the eye becomes dilated or when there is double vision.

Hydrobromic acid when combined with quinine prevents the ringing in the ears and other head symptoms.

Sulphate of quinine, 1 drachm (or 4 grams),
Hydrobromic acid, 1½ ounces (or 48 grams),
Water, 1½ ounces (or 48 grams). Mix.

DOSE.—One to four teaspoonfuls.

Leptandrin is a substitute for quinine of considerable value. It may be combined with quinine or with other preparations.

A very important fact to be remembered is that the system after a time gets used to quinine, or to any other remedy that has been taken, and needs a new impression that only some new preparation can give. It appears that what will break up the chills one season

may fail on the same person the next year, and a new remedy is demanded.

AGUE CAKE OR ENLARGED SPLEEN.

In chronic ague the spleen sometimes becomes very much enlarged. This condition may be treated by the following prescription :

Iodide of ammonium, 1 drachm (or 4 grams),
Fowler's solution, half a drachm (or 2 grams),
Tincture of columbo, half an ounce (or 16 grams),
Water, 1½ ounces (or 48 grams). Mix.

Dose.—A teaspoonful before meals.

Ergot and ergotine may also be given. Ergot injected hypodermically has given excellent results. The side should be painted with iodine. *Faradization*, with a strong current over the side, has also done well. (See Electro-Therapeutics.)

ALCOHOLISM, CHRONIC.

Chronic alcoholism is a *chronic disease of the nervous system, usually functional*, though it may lead to structural lesions, excited by *long-continued use of alcoholic liquors*.

Other parts of the body, and notably the liver, may be affected injuriously by alcoholic liquors, as everybody knows ; but the term chronic alcoholism applies only to the nervous system, although the bad effects of alcohol may be, at the same time, experienced in other organs. A patient suffering from chronic alcoholism may suffer also from cirrhosis of the liver, but that disease of the liver is not a part or symptom of the chronic alcoholism ; it is rather a *co-existing disease* induced by the same exciting cause. Chronic alcoholism is, then, *distinctively a nervous disease*.

Symptoms.—The leading symptoms of chronic alcoholism, by which it is usually recognized, are these :

Insomnia ; vertigo ; headache ; tremors ; hallucinations ; difficulty of breathing ; mental and muscular debility ; mental depression.

To these general symptoms may be added a large number of special nervous sensations of an abnormal though very vague character.

The disease does not always stop with these indefinite and comparatively trifling symptoms, but may advance until fixed paralysis of motion or sensation, or of both, appears; muscular contractions, with rigidity, may ensue, and all these symptoms may be complicated with or followed by insanity. Even when positive insanity does not occur, the mind usually suffers, and in various directions. Besides the great depression that sometimes suggests suicide, the memory becomes feeble and illusive, and cerebral control is perceptibly weakened.

Among the graver results of chronic alcoholism are alcoholic epilepsy—which is more curable than ordinary epilepsy—congestive mania that may terminate in dementia, also general paralysis, melancholia, and mania. According to Dagonet, microscopic examination of the cerebro-spinal system, in cases of severe chronic alcoholism, discovers atrophy and hardening of the brain substance, effusion in the ventricles, thickening of the lining membrane, granular or fatty degeneration of the nerve elements and vessels. Amyloid corpuscles are also found. Lancereaux regards all these pathological changes as analogous to those that take place in the liver—that is, that they simply indicate fatty degeneration.

Cause.—The great *exciting* cause of the disease is the *long-continued use of alcoholic liquors in relative excess*. Any liquors that contain alcohol may excite the disease, but raw spirits are, of course, the worst, especially when habitually taken on an empty stomach. It is *alcohol* mainly, and not the adulterations contained in alcoholic liquors, that excites this disease.

I would specially insist on the significance of *civilization as the great predisposing cause of chronic alcoholism*. Alcohol alone, in quantities however great, seems to be powerless to produce this disorder unless it acts on a nervous system previously made susceptible by in-door life and nerve-exhausting influences, such as the printing-press, the telegraph, and the railways, that are peculiar to our modern civilization. It is not necessary that we should become excessively nervous, but that we should become considerably so, before alcohol can produce chronic alcoholism. In this view I am justified by the fact that we have no clear evidence from history that chronic alcoholism as a disease has ever appeared among the savage or semi-savage peoples, who are the grossest abusers of alcoholic liquors; and it is far more frequent now than it was among our ancestors of but a few generations back, who indulged in intoxicating drinks to a degree that seems to us past belief. There never was a time in the recorded history of modern civilization when, in proportion to the numbers, there was so little use of alcoholic

liquors among the respectable classes as now ; and there never was a time, probably, when there was so much of chronic alcoholism among these very classes ; indeed, it is but recently that attention has been called to this disease, and we may justly believe that its increasing frequency has compelled our scientists to give it attention. The Anglo-Saxons are by nature a race of gluttons and drunkards (although by grace and culture the better portion have become temperate and gentlemanly), and the climate in which the English, Americans, and Scandinavians live is one specially calculated to foster the habit of inebriety, and yet the alphabet of drinking is something that we have yet to learn. There are tribes in Africa and in the islands of the Pacific who are drunk almost from birth to death ; their normal condition is to be drunk as with us it is to be sober. We are all aware that a century or so ago it was the custom among our ancestors, especially in Scotland, to celebrate every distinctive or trifling event—births, funerals, weddings, barn-raisings, house-warmings, and so forth, to infinity—with profuse imbibing of strong liquors. Now, among certain savage tribes this custom still prevails in most disgusting enormity. The East-African “drinks till he can no longer stand, lies down to sleep, and awakens to drink again.” Reprove an Angola negro for being drunk, and he will reply, “Why, my mother is dead,” as if that were excuse enough. In our land the sight of a man who has been wounded and scarred in a drunken brawl is by no means common, save among the very lowest orders ; but in certain regions of Africa there are whole tribes, nearly all of whose members are thus disfigured. The truth is that this whole habit of intemperate drinking is a survival of savagery ; it is a projection of barbarism into civilization, and, like other savage survivals, it is gradually disappearing among all those classes where civilization really prospers.

It is true that all savages in cold or hot climates are not intemperate, but that is because they can get nothing to drink. The North-American Indians were generally sober, but for the same reason that the inmates of Sing-Sing are sober—they live under a rigid prohibitory law : but open a cask of rum before a hundred Indians, and in an hour you will have a hundred drunkards. And yet, notwithstanding this enormous excess of savages, there is no evidence that I can find that chronic alcoholism prevails among them ; injured they must be by their prodigious potations, but probably not through any form of nervous disease. Among all barbarous people, insanity, hysteria, neuralgia, insomnia, and nervous dyspepsia, and all other functional diseases, are either rare or utterly unknown. Chronic alcoholism is one of a large number of

diseases for which we have to thank the nineteenth century. It seems to increase as the habit of drinking diminishes. Formerly any amount of drinking would not cause it ; now it may follow excesses comparatively slight.

In my work on "Stimulants and Narcotics," I have given the authorities for my statements and conclusions. Granting that in the long lapse of ages, in the slow evolution of humanity—through we know not how many millions of centuries—race is a *result* of climate ; yet in appreciable historic time—that is, within the past three or four thousand years—race rises everywhere, more or less, superior to climate, and, within certain limits, prevails over it ; and this habit of drinking is one of the features in which the dominance of race seems prominent. Most strikingly this is illustrated by the history of the Hebrews. This peculiar people have gone out through all the world and their descendants to the very ends of it, under all climes, and in the presence of all forms of alcohol, and yet chronic alcoholism is very rare among them, if indeed it can be said to have with them any existence. They are not abstainers ; they drank the wines of their native Palestine, they drink the beers and wines of Germany and America ; there is no other race that so universally drinks, there is no other race that is so universally sober—they drink but are not drunkards ; but there seems to be in their nervous system some subtle and never-failing transmissible force or quality, as much a part of their constitution as their physiognomy or avarice, which, mightier than climate and stronger than all temptation, enables them to take coals in their hands without being burned, which can always say to alcohol, under all its disguises, "Hitherto shalt thou come but no further, and here shall your fiery power be stayed."

There are no other people who have gone into all climates to the extent that the Jews have, and yet retained so successfully the habits of temperance. The Italians and Spaniards are much less disposed to chronic alcoholism than the more northern nations. In recent times the disease seems to have been increasing in France, where formerly it was uncommon. But the race above all others predisposed to this disorder is the Anglo-Saxon. It is, indeed, in England and America, and among the Scandinavians, that attention was first and most earnestly called to this disease.

Climate.—In regard to the influence of climate, independently of race, my researches seem to show that the disease is most frequent in temperate and cold climates. The habit of excessive drinking is not confined to any climate ; it most abounds in the tropics and in the coldest regions of the North ; but between the

temperate and the tropic regions there is what I have termed the "temperate belt," which embraces the southern part of the north temperate and the northern part of the torrid zone, and in which all round the globe there is less intemperance than in any other inhabited region either north or south of it. This belt includes Spain, Italy, Southern France, Turkey, Syria, Persia, North Africa, Southern China, and Mexico. The excessive drinking of hot or of even warm climates induces disease of the liver, but not chronic alcoholism, at least among the natives. The chosen home of this disease, so far as we now know, is the belt including Sweden, Great Britain, and the United States; concerning Russia I have no information. It is a noteworthy fact that not only alcoholic liquors but coffee also can be used more freely in warm than in cold climates. In a most interesting way this is illustrated in our own country, where the Southerners of the respectable class drink far more freely than their Northern friends of the same class, and show it less. Moisture and dryness, and probably also atmospheric electricity and ozone, and especially *the alternations of heat and cold* in the northern part of the United States, are factors that give us a partial explanation of the unparalleled nervousness of the Americans, and also of the great prevalence of chronic alcoholism among us, in spite of the fact that in our better classes there is more of total abstinence than in any other civilized nation. The air of California is exceptionally dry, and nervous diseases are alarmingly frequent there, and the effects of inebriety are of the most serious character, even in the wine-producing districts.

Sex.—All authorities, I believe, concur in this, that alcoholism is more frequent among males than females. Out of 938 cases of chronic and acute alcoholism observed by Magnus Huss, Rayer, Bang, and Hoegh-Guldberg, only 34, or about 1 in 27, were women.

Age.—About the prime of life, between 37 and 42, seems to be the time when the symptoms of this disorder oftenest appear. The habit of drinking to excess is almost always formed earlier than this, but months or years are necessary, as a rule, to so exhaust the nervous system as to excite the symptoms of alcoholism.

Treatment.—This disease should be treated—as analogy and experience both show—on the same general principles as the same symptoms coming from other causes. The cardinal need is to improve the nutrition of the central nervous system. The really good remedies at our command to accomplish this are not numerous, but they are potent for the upbuilding of broken-down nervous systems. The leading remedies on which we are to rely are these :

1. *Preparations of zinc and phosphorus.*—Of these remedies

the oxide of zinc has the oldest reputation, and it is really a remedy for this affection of great and peculiar power. Zinc, like phosphorus, calms the fretted nerves and induces sleep, which is a great want in these cases. The oxide of zinc is given in powder, dry on the tongue, or in water, or in the form of pills, but pills may become hard and difficult of absorption. Among the laity, it has long been the custom to treat inebriety by oxide of zinc in increasingly large doses, several grains three times a day, until both nausea and vomiting are caused. They aver that in this way the desire for drinking is destroyed, that thus they can lay the axe at the root of the tree, and extirpate both the disease and the exciting cause of it with the same weapon.

2. *Electricity in the form of central galvanization and general faradization, varied with galvanization of the brain, the spine, and the cervical sympathetic.*

Electricity used by these methods, in the hands of those who are familiar with electro-therapeutics, is something more than a stimulant merely—it is a *tonic*, a means of improving nutrition inferior to none other, in some respects superior to any other. I have used it in a number of cases of chronic alcoholism, sometimes with other remedies, sometimes without them, and with most satisfactory results. It allays nervous irritability, produces sleep, excites the appetite, and increases the capacity for muscular or cerebral toil. To use it successfully in cases of this sort, it should be used warily, with just discrimination, and patiently, and, above all, with that combination of caution and confidence that can only come from enlightened experience. In some of the insane asylums of this country and of Europe, electricity has long been used with advantage, particularly in cases of hysteria, hysterical insanity, in primary dementia, and neurasthenia, and it would, I am sure, be a great gain if all our inebriate asylums could introduce the scientific use of this agent.

3. *Fat*, in the form of cod-liver oil, cream, and the fat of meat.

Cod-liver oil I give in an emulsion of yolk of eggs with phosphoric acid and bitter-almond water.

4. Counter-irritation over the tender vertebræ and at the back of the neck. Very small and narrow blisters, frequently repeated, best accomplish this purpose, and when so used counter-irritation does much good and no evil.

(See Delirium Tremens or Acute Alcoholism, also Inebriety.)

ALCOHOLISM, ACUTE.—Poisoning from the use of alcoholic liquors. (See Delirium Tremens, also Dipsomania or Inebriety.)

ALOPECIA.—(See Baldness, also Plate 10.)

AMAUROSIS.

When there were no means of examining the bottom of the eye, where the nerve enters from the brain, all defects in vision which could not be traced to some external cause, were placed under the head of amaurosis. Since the invention of the ophthalmoscope—which is simply a reflector, by means of which light can be thrown from a lamp or other source of illumination upon the retina and nerve of the eye, thus allowing these parts to be plainly seen (see Ophthalmoscope)—when we speak of amaurosis we mean certain diseases of the optic nerve and retina which can only be certainly recognized by means of this instrument. These affections are usually incurable, and result from inflammations of the brain, of the nerve itself, from the bursting of an artery within the eye, the plugging up of a blood-vessel, or similar causes. They are not as common as they were formerly supposed to be. They were at one time confounded with affections of the eyeball that only required the proper use of spectacles. No one but a person medically educated is competent to decide that an affection of the eye is amaurosis.

AMENORRHEA. Suppression of the monthlies. (See Women, Diseases of.)

AMNESIA. Loss of memory of words. (See Apoplexy.)

ANCHYLOSIS. Stiffening and rigidity of a joint. This may result from inflammation or fracture. (See Fractures.) The treatment is electricity and *massage* or systematized rubbing.

ANEMIA.

Anemia means poverty of blood.

It is caused by *hemorrhage*, by *exhausting diseases*, by *blood-poisons*, and by *confinement*.

The symptoms are *palleness*, *debility*, *nervousness*, nervous *pallitation of the heart*.

This disease is very apt to be confounded with what I call *neurasthenia* or *chlorosis* (see Neurasthenia), which are nervous diseases. Anemia is a disease of the blood, neurasthenia of the nervous system. One may cause the other. They are often associated. Both are liable to occur in young girls, or boys about the age of puberty.

The *treatment of anemia* is important, for the disease may

give rise to *neuralgia*, and other and nameless shapes of nervous disease.

1. *Iron, quinine, and strychnine*, in the form of elixir of the pyrophosphate of iron, quinine, strychnine. *Muriated tincture of iron*, in doses of from ten to twenty drops, is one of the best of the preparations of *iron*.

2. *General faradization and central galvanization*.—I continually use these methods of treatment of anemia, and with good results. They are especially useful for those cases that are associated with chlorosis (green sickness) or nervous exhaustion.

It often succeeds in these cases after internal tonics have failed. It may be used in connection with other tonics. My own habit is to treat anemic and exhausted patients by general electrization alone for some time, and when they have abandoned treatment to give them a prescription of the elixir spoken of above.

3. *Air, sunlight, and exercise*.—I mean to improve every opportunity to speak a good word for these three great physicians, even at the risk of frequent repetition.

4. *Abundant and nourishing food*.—Anemic patients need plenty of meat, beef-tea, fresh eggs, and bread.

5. *Plenty of sleep*.—Sleep can only be expected by those who obey the laws of health. Sleep is food for the blood, as well as for the nerves.

ANESTHESIA BY INHALATION.

The production of unconsciousness by the inhalation of the vapor of ether or chloroform.

Chloroform was first used by Dr. Simpson, of Edinburgh, in 1847. In a short time it became known all over the world.

Chloroform or ether, when skilfully given, affords great relief in the agonies of childbirth, and by many practitioners is used almost habitually.

No case of death from the use of chloroform at childbirth is on record. Two ladies, however, died while inhaling chloroform on their own responsibility, during the absence of the physician. It is claimed by some that chloroform at childbirth produces "exhaustion, hemorrhage, fever, and inflammation and cerebral disturbance." On this question professional opinions vary.

Chloroform is also given *in locked-jaw, in asthma, in convulsions, in St. Vitus's dance, in delirium tremens, in neuralgia, in toothache, in sleeplessness*, and in all forms of *pain*.

It is at best a dangerous agent. It should only be used when necessary, and when ether fails. Neither of them should be taken habitually. Neither of them should be inhaled by any one alone, without a responsible attendant. Even a physician cannot with safety use the agent on himself. The risk is too great. Deaths are continually occurring from carelessness in the use of these agents.

If we must use ether to relieve our *headache*, *neuralgia*, or other *pain*, let it be administered by some responsible attendant, if a physician cannot be obtained.

If bad symptoms occur—pallor, suspension of breathing—use artificial respiration as directed in the chapter on surgery, electricity through the chest and neck, and dash cold water on the head.

DOSES.—Chloroform is best given by a handkerchief formed like a funnel, so that the patient may breathe common air at the same time. The dose varies with the temperament. In midwifery, neuralgia, simple insensibility is all that should be attempted. This may be accomplished oftentimes by a few drops of chloroform. In surgical operations the patient must be made unconscious. From one to four or five drachms (4, 16 or 20 grams) is sometimes necessary.

Chloroform is given internally for a large variety of diseases, but not with uniform success. It is also applied locally for neuralgia, sprains, etc.

Sulphuric ether is used in nearly all spasmodic diseases, such as asthma, hysterics, hiccough, cramps, and other nervous affections. It is given sometimes as a cordial in low fevers, and also in malignant fevers for the purpose of allaying spasmodic twitchings.

Applied externally, ether stimulates and reddens the skin; it is used for this purpose in nervous headache, and in toothache, being applied to the cheek. To produce the effect of irritating the skin, the part to which it is applied must be kept covered, otherwise it evaporates so quickly as to cause extreme cold.

The dose is from half a teaspoonful to a teaspoonful in a little water, or in three or four ounces of camphorated mixture.

Etherization.—The power of ether to produce insensibility had been known many years before its use became popularized. This fact, however, was known only to a few, and attracted no attention.

The first experiments which demonstrated the anesthetic powers of ether, and forced the public to give them heed, were made by Dr. Morton, a Boston dentist, September 30th, 1846. Before that time, Dr. Wells, of Hartford, had experimented with

nitrous oxide, or "laughing gas." The progress of etherization in this country was at first very slow. Europe went ahead with it much more rapidly than we. It became popular in England, in France, and in Germany, before America—the land of its birth—was willing to receive it. This is another illustration that a prophet is not without honor except in his own country.

It is now used throughout the civilized world to produce unconsciousness in surgical operations. It is also used in midwifery, and for the relief of neuralgic and other pains.

Except in great emergencies, it should only be administered by a skilful physician. The dose varies with the temperament of the patient, and with the method of administration. Various forms of inhalers have been devised. Usually a sponge is employed. Inhalers that admit atmospheric air at the same time with the vapor of ether are the safest.

Etherization is also used in *convulsions*, in *locked-jaw*, in *hysterical fits*, in *asthma*, in *attacks of madness*, and in painful menstruation. As Dr. John Brown says, "it is one of God's best gifts to his suffering creatures."

As compared with chloroform, ether is much the *safer*. A few deaths have occurred from its use, but only a few, while we know that several hundred have fallen victims to chloroform.

It is much *slower* than chloroform, and its odor is more disagreeable. The present feeling among the profession is to use chloroform less and ether more.

Nitrous oxide ("laughing gas") is also used for anesthesia in short operations.

ANESTHESIA, LOCAL.

Recently ether has been used to produce *local* anesthesia. Ether spray is blown on the part which we desire to benumb. The rapid evaporation produces great *cold*. The part becomes benumbed, and slight operations, such as removing a toe-nail, can be performed without pain.

Local anesthesia may also be produced by applying a freezing mixture of *ice* and *salt*. The part when thus frozen is for a time anesthetic. Carbolic acid is also a convenient local anesthetic. I often apply it to the skin a few moments before I introduce the needle in electrolytic operations. (See Electrolysis.)

ANEURISM

A bloody tumor connected with an artery. The walls are formed of the coats of the artery or of the surrounding tissues. Before the coats of the artery break or dilate so as to make an aneurism, they frequently undergo fatty degeneration. Aneurisms occur most frequently in the aged and in those who drink and work hard with their muscles. When large and situated in or near the heart, they are fatal sooner or later.

The treatment which sometimes succeeds is long and firm compression by the hand or by tying the artery above the tumor, or electrolysis or galvanic puncture. (See Electrolysis.)

ANGINA PECTORIS (BREAST-PANG).

This is an intermittent affection, coming on in fits at irregular intervals, and is one of the most painful and most fatal of all diseases. The fit commences suddenly, and usually when the patient is walking, with a severe lancinating or stabbing pain, generally behind the lower part of the breast-bone, extending in the direction of the left nipple. The constrictive suffocating sensation which accompanies the pain compels the patient to stop, and in the course of a few minutes, if quiet be observed, the attack goes off. The first attacks are comparatively slight and of short duration, no particular inconvenience being felt when they are over; but after a time they become more severe, and continue much longer; the pain extending to the arm, and even to the ends of the fingers, generally on the left side only, though sometimes it extends to both, accompanied with a feeling of numbness, which prevents the use of the arm. Occasionally the neck, the left jaw, and even the ear, are affected, the speech being slightly impeded; and the anxiety and suffocating sensation are frequently so severe that the patient dreads immediate death. When the disease has advanced to this extent, the fits last from half an hour to an hour, or even longer. The respiration is usually very little affected, though it may be sometimes a little more frequent than natural. The pulse is in some cases natural; in others quick, strong, irregular, or intermitting. The face may be either pale or red; sometimes pale or with a sallow tinge. The skin may be hot, or covered with a cold, clammy sweat.

After the termination of a severe attack the patient experiences a feeling of fatigue and soreness of the parts affected, and the sen-

sation of numbness frequently continues for a considerable length of time.

Cause.—The treatment of this affection is not very satisfactory. It is difficult at the outset to determine whether we have or have not the disease. It is still more difficult to tell what the cause is. The disease may depend on a variety of causes.

Treatment.—Galvanization has been found of service in this disease. Fowler's solution of arsenic is recommended in doses of from five to ten drops after meals.

Those who suspect that they have this or any other affection of the heart should consult some medical authority and have their doubts confirmed or dispelled. (See Heart, Diseases of.)

ANIMAL PARASITES. (See Skin, Diseases of.)

ANIMAL MAGNETISM. A new force erroneously supposed to exist in the body. (See Trance.)

ANTIDOTES. Medicines which counteract and destroy the effects of poison. (See Poisons, p. 444.)

APOPLEXY.

Apoplexy is characterized by a sudden suspension, more or less complete, of the power of sense and motion, the organic functions of circulation and respiration continuing to be performed, though impaired to a certain extent.

This disease is caused usually by pressure on the brain from an effusion of blood, its symptoms varying according to the extent of the effusion.

Symptoms.—There are certain symptoms which sometimes give notice of the approach of apoplexy—namely, giddiness, indistinct vision, with the appearance of motes or sparks before the eyes, buzzing or ringing in the ears, drowsiness, a sensation of fulness in the head, general headache, or a pain in some particular part of the head, inability to articulate distinctly or to walk firmly. But in the majority of cases people are struck with apoplexy when to all appearance in excellent health, and without any indications of the approach of this dreadful disease.

This disease may be mistaken for a *fainting fit*, though the distinction is sufficiently well marked. When a person faints, the face and lips lose their color and the skin becomes cold. In apoplexy, on the contrary, the face is generally red and the skin hot.

In fainting, the pulse and respiration are almost suspended. This is not the case in apoplexy. A fainting fit is of but short duration, and the individual on recovering does not experience pain.

Epilepsy, or the falling sickness, resembles apoplexy in so far as the individual in both cases falls down in a fit ; but in the former disease there are convulsions, the limbs are not paralyzed, but rigid, and the eyes are convulsed and look upward ; these symptoms distinguish it sufficiently from apoplexy. (See Epilepsy.)

Complete intoxication is distinguished from apoplexy by the smell of the liquor which the individual has drunk, and by the weakness of the pulse.

Causes.—The great cause is overwork and overworry of the brain. High living is not so much the cause as is commonly supposed. It comes on most frequently at night and after dinner. Intemperance causes it. It is most frequent after the age of fifty, but is now quite common between 30 and 50.

Nothing is more difficult than to determine in any given case of apoplexy, or indeed any affection of the nervous system, *the precise cause* of the calamity. In the majority of cases these maladies are the results of *many* injurious causes acting upon the system perhaps for years.

Preliminary Symptoms.—There are no certain premonitory symptoms of apoplexy. Many persons who have dizziness and various unpleasant sensations in the head are needlessly alarmed on this subject. In the majority of cases—though not in all—the attack comes on without warning.

Treatment.—1. *Rest.* Let them alone. Bleeding usually does more harm than good.

In the majority of cases a patient taken with apoplexy needs at first only careful and judicious *nursing*. The head should be kept raised, and cool cloths should be put on the head.

2. *Mustard-plasters* to the calves of the legs and back of the neck. These have the effect to draw the blood from the head.

3. *Strong purgatives.* A drop or two of croton oil on the tongue, a good dose of jalap or podophyllin, or any other powerful purgative, will answer the purpose.

Apoplexy often leaves a patient paralyzed in one half the body. This paralysis is best treated by general or localized *electrization and rubbing with the hand*. (See Paralysis.)

Concerning this affection, Prof. Austin Flint thus advises :

“ The liability to a recurrence of apoplexy after recovery from an attack renders it important to observe all possible precautions by way of prophylaxis. Placing the system in the best possible con-

dition by means of a well-regulated diet and regimen, and avoiding exciting causes, will afford all the security which can be obtained. It is not probable that any protection is afforded by reducing the powers of the system, and other evils may thereby be induced. It is injudicious to adopt a diet which is insufficient for the wants of the system, or to resort to repeated blood-lettings, cathartics, or other lowering measures. In striving to avoid excesses and imprudences of all kinds, care must be taken not to err in the opposite extreme. Mental occupation within certain limits is advisable.

“The liability to apoplexy, if an attack have never occurred, cannot be estimated with any degree of certainty. This is one of the affections which persons are apt to apprehend; and if certain cerebral symptoms are experienced, especially vertigo, the fear of apoplexy is often a source of much unhappiness. The suggestion by the physician that there is danger of this affection is an indiscretion which I have known to prove most calamitous. When apprehension is felt, the physician is warranted in giving assurances that vertigo and other cerebral symptoms are sufficiently common without being followed by apoplexy, and that an apoplectic attack is rarely preceded by obvious premonitions. Needless uneasiness may oftentimes be removed by these assurances.”

Among other remedies to be taken are *bromide of potassium* in doses of twenty grains (1.25 grams); *oxide of zinc*, in doses of one or two grains (0.06 or 0.12 grams), three times daily; and arsenic, in doses of one fiftieth of a grain (1 milligram), after meals.

APHASIA—AMNESIA—AGRAPHIA.

Aphasia is a disease that has recently attracted considerable attention. It signifies a lack of the power of speech. The difficulty is sometimes so severe that the patient can only say “yes” and “no.” He cannot say the word that he desires to say. This affection sometimes occurs after an attack of apoplexy. It is an affection of a very grave character. It is always a result of some injury of the brain. It is now believed by many that in *aphasia* the posterior lobe of the third convolution is injured.

Amnesia signifies lack of power of memory of words.

Agraphia signifies lack of power of writing.

APHONIA. (See Larynx, Diseases of.)

APHTHE (THRUSH).

This is a very common complaint amongst children, and almost invariably arises from a disordered condition of the stomach and digestive organs. It is sometimes caused by improper diet in children brought up by the hand, or by milk of a bad quality from an unhealthy nurse, or one who is immoral or intemperate in her habits.

Symptoms.—When this complaint is of a mild character, the general system is not much disturbed; there is commonly an increased degree of redness on the inside of the mouth and about the tongue, and these parts are covered with specks or patches resembling curdled milk. But in more severe cases these whitish-looking flakes extend to the back parts of the throat, and even down into the gullet. The child is fretful, an increased degree of slavering and hesitation in nursing may be observed, and the mouth is hot and tender. The little patient now becomes slightly feverish, although this symptom is not always present, is sick at stomach, drowsy, and starts in its sleep, as if frightened or suffering pain. In all cases there is acidity of the stomach, while the breath and the coagulated milk which is vomited up have a sour smell; the bowels are also affected, the stools being watery and of a green color, with considerable griping. Sometimes the *anus* becomes excoriated by these acrid evacuations, which are discharged so frequently as greatly to distress the child, who now becomes pale and loses flesh. Thrush generally lasts eight or ten days, but is not dangerous unless in some cases where the white flakes or crusts fall off, leaving the surface of a brown or bluish color, followed by a bad kind of ulceration of the parts. When this occurs the purging is very severe, and the stools have a slimy appearance.

Thrush is not contagious, and is generally observed in weak children, or when the mother's milk is of a bad quality.

Treatment.—If there be no purging at the commencement of this affection, the stools will generally be found of a green color; and as there is always acid in the stomach and bowels, one of the best remedies is *magnesia* in small doses, repeated from time to time until the bowels are freely opened. One of the best local applications is *finely powdered borax*, mixed with an equal quantity of sugar, and placed upon the tongue, which, by its natural movements, will soon carry the powder to every part of the mouth. This should be repeated every two or three hours, or the honey of

borax may be applied to the affected parts of the mouth with a camel's-hair pencil. In mild cases no other treatment will be required.

If the evacuations from the bowels still retain a green color, and if there be little or no purging, equal parts of *lime-water and milk* will be found useful. A tablespoonful of this mixture may be given four or five times a day. If there be thin watery stools, with griping and straining, a teaspoonful of the following mixture may be given every two hours until the child is quieted :

Magnesia, 12 grains (or 0.72 grams),
Laudanum, 3 drops (or 0.09 grams),
Water, 1 ounce (or 32 grams).

With a sufficient quantity of sugar to make it palatable.

Weak solutions of chlorate of potash will be useful. The child may swallow a little of the solution.

To aid in relieving the irritation of the bowels, the little patient should be placed from five to ten minutes in a bath of about eighty degrees of Fahrenheit's thermometer, and then well dried and wrapped up warmly.

During the continuance of this complaint the mother's diet should be carefully regulated, so as to prevent acidity at stomach, and should be of such a nature as to insure the purity of her milk. Plain animal food, with bread or rice, is the most suitable kind of diet ; no vegetables which will induce acidity upon the stomach should be taken, and water should be the only beverage at dinner.

Thrush generally occurs before the child is weaned, and then the mother's milk is the only nourishment that should be allowed. But if the child has been weaned before the complaint makes its appearance, the diet should consist of chicken-broth or weak beef-tea, lime-water with milk, or gum-water made by mixing gum-arabic with warm water. But although there is generally considerable thirst, children seldom have much appetite for food during the progress of thrush.

Rubbing the inside of the child's mouth with a rough cloth or a piece of flannel is a barbarous custom.

As long as the complaint continues the greatest attention should be paid to cleanliness ; the lower extremity of the bowels and the hips should be washed with tepid water, or milk and water, after

every evacuation, and then, if there be any excoriation or abrasion of the skin, the parts should be anointed with fine soft pomatum or glycerine.

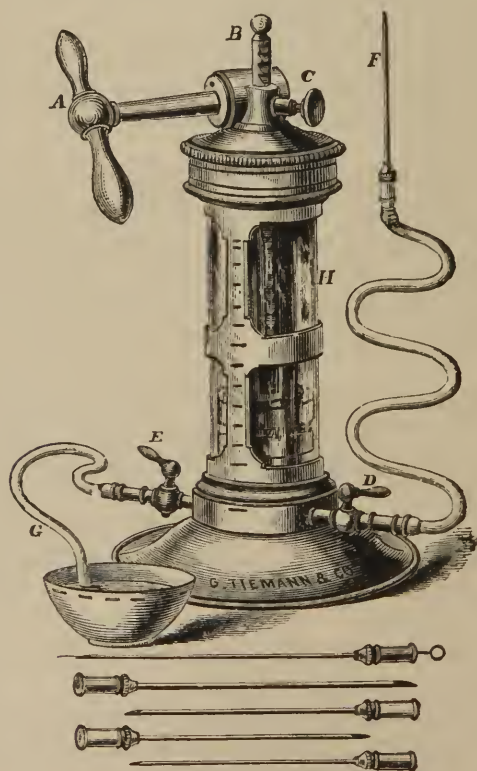
APPARENT DEATH. (See Trance.)

ASCITES. (See Dropsy.)

ASPHYXIA. Arrest of respiration ; suffocation from any cause, as in drowning (see page 436), or in the newly born (see page 441).

ASPIRATION.

Drawing off the fluid contents of tumors, abscesses, or the contents of the bladder or other cavities with needles. *Dieulafoy's Apparatus* for aspiration is very popular in the profession. The principle on which it acts is that of suction, by means of an air-



PNEUMATIC ASPIRATOR.

pump. Aspiration is usually a safe procedure. The body is wonderfully tolerant of the introduction of needles.

ASTHMA.

It is generally unaccompanied with fever, and is characterized by great difficulty in breathing, recurring in fits at irregular intervals, attended with a feeling of constriction in the chest, wheezing, and a difficult cough, terminating in expectoration.

Symptoms.—There are certain symptoms which give notice of the approach of a fit of asthma, particularly if the individual has been subject to it for some time—viz., a sensation of oppression and fulness at the pit of the stomach, eructation of air, headache, sickness, disturbed rest, and not unfrequently an increased flow of pale urine ; they are, however, by no means regular, and in some cases are entirely wanting.

The fits usually come on between eleven o'clock at night and two o'clock in the morning. The patient awakes suddenly with great difficulty of breathing and a most distressing sensation of tightness and constriction about the chest, which compels him to sit up in bed ; he raises his shoulders, throws back his head and elbows, and uses every means in his power to expand his chest ; he breathes with a wheezing noise, which may be heard at some distance, and coughs occasionally, but with considerable difficulty ; and though he can scarcely speak, he requests the windows to be opened, that he may breathe fresh air. The face sometimes remains pale, but in general becomes red or acquires a bloated appearance ; the eyes also appear red and prominent, and the face and breast are covered with sweat. The pulse is quick, weak, and not unfrequently irregular or intermittent ; the hands and feet are cold, and in some cases, when the fit is very severe, the patient vomits frothy, bilious-looking matter.

The fit having continued two or three hours, or even longer, terminates with cough and expectoration, either more or less profuse, and the exhausted patient falls asleep. When any one has once suffered from a paroxysm of asthma, he may be almost certain that it will recur at intervals of longer or shorter duration.

When asthma is purely spasmodic, uncomplicated with any other disease, the individual, after the fit is over, recovers his breathing entirely, and suffers no inconvenience until the recurrence of another attack. True, spasmodic asthma, not associated with other diseases, is not common, yet it does occur ; and we have the best of evidence that individuals have died during the fit,

and on opening the body not a trace of disease has been found. In the great majority of cases, however, the breathing during the intervals is either more or less affected, and symptoms of the morbid changes which have either caused the disease or resulted from it may be easily traced.

Exciting Causes.—The exciting causes which have an immediate tendency to bring on fits of asthma are very numerous, the principal of which are, errors in diet, particularly if attended by acidity at stomach or *heartburn*; excess in drinking wine and spirits; distention of the stomach from an accumulation of wind; exposure to cold, moist air, or too dry an atmosphere; suppressed perspiration of the lower extremities, caused by sitting with cold or wet feet, sudden changes of weather, certain winds, and, indeed, all the causes which bring on cold or catarrh of the *bronchi* or air-passages; sudden mental emotions, as anger, terror, surprise, etc.; loud or too long speaking; certain occupations of artisans, which expose them to an atmosphere charged with dust; irritating gases, metallic fumes, or minute particles of cotton, wool, fur, and metal. In some people exhalations from the vegetable kingdom, as the effluvia from ipecacuanha, from hay, or from grass in flower, will induce an attack of asthma. (See Hay Fever.) Some suffer least in flat countries and in large towns, pure mountain air being almost insupportable to them; others, again, are rendered miserable by the smoky atmosphere of a large town.

Treatment.—*First. To relieve the attacks.* This is done in various ways.

1. The following prescription may be tried :

Wine of ipecac,
Tincture of lobelia, equal parts.

Dose.—Half a teaspoonful every half hour.

2. Tincture of henbane sometimes does good.
3. Hoffman's anodyne in the ordinary doses may be tried.
4. Smoking tobacco, or smoking cigarettes of stramonium.
5. Burning paper soaked in saltpetre and breathing the air.
6. Mustard-plasters and dry cupping between the shoulders.
7. Hot foot-baths.
8. Inhaling oxygen.

It is well for each patient to try all these remedies in order, until he hits on the one that best answers his purpose. What will help one may injure another.

One remedy may lose its efficacy in time ; then it is necessary to try something else.

This prescription is good :

Tincture of lobelia,
Tincture of henbane,
Compound spirits of ether,
Syrup of tolu.
One ounce (or 32 grams) of each.

Dose.—A teaspoonful in water every half hour during the paroxysms.

Secondly. Treatment in the intervals.—Asthmatic patients generally need tonic remedies.

Among the tonics that are found most useful are :

Iodide of potassium, in doses of 5 grains (or 30 centigrams),
Arsenic (Fowler's Solution), very small doses—5 to 10 drops
in water, after meals,
Bromide of potassium, in 20-grain doses (1.25 grams).

Central galvanization. I have helped many cases by using electricity.

Cannabis Indica, in doses of one third of a grain (or 2 centigrams), three times a day, double dose at night,

Coffee, take strong,

Citrate of caffeine in 1 or 2 grain doses (6 or 12 centigrams).

The following *anodyne* prescription I can recommend with confidence—I call this my *zinc combination* ; it is useful in many nervous diseases :

Oxide of zinc, 1 drachm (4 grams),
Bromide of zinc, 1 drachm (4 grams),
Valerianate of zinc, 1 drachm (4 grams),
Extract of belladonna, 4 grains (0.25 grams).

Mix. Make sixty pills. Take one or two three times daily. Stop for a day or two when the mouth becomes very dry through the action of the belladonna.

A liniment of equal parts of *chloroform* and *turpentine* rubbed on the chest several times daily is excellent.

Grindelia combination.—The following prescription embraces the new *Grindelia* remedies :

Grindelia robusta, 2 ounces (or 64 grams),
Grindelia squarrosa, 2 ounces (or 64 grams),
Yerba santa, 2 ounces (or 64 grams),
Fowler's Solution, half an ounce (or 16 grams),
Glycerine, 2 ounces (or 64 grams). Mix.

DOSE.—One teaspoonful after meals and before retiring. This prescription, which I have introduced during the past year (1878), is good not only for asthma, but also for *bronchitis* and *hay fever*.

All of these remedies may be tried until benefit is received, *for all of them* have in some cases done good, and, again, all of them have failed. There is no specific for asthma. Asthmatic patients are very capricious. Some are benefited by going to the seashore, others by going to the interior. Some can sleep better on the first floor, others in the upper stories.

I knew an asthmatic patient in whom the odor of buckwheat-cakes would bring on an attack immediately. If he entered the front door of a house when they were cooking buckwheat-cakes in the kitchen, he would sometimes be thrown into a violent paroxysm.

Asthmatic patients have these consolations: They rarely die during an attack; they will usually live to a good old age.

Prof. Flint has the following very judicious remarks on this subject:

“During the paroxysm the objects of treatment are to lessen the suffering and bring the paroxysm to an end as speedily as possible. The measures for these objects have reference to spasm as the essential pathological condition. The measures to relieve spasm are various, each of which proves efficacious in some cases and not in others. Frequently the past experience of the patient is the best guide as to the particular measure which will be most likely to afford relief. In cases of asthma unaccompanied by bronchitis, I have known a full opiate quickly and completely successful; but, in the larger proportion of cases, it will not succeed in cutting short the paroxysm nor afford marked relief. Of other narcotics, stramonium is best suited to this affection. The usual mode of administration is to smoke the dried leaves or fibres of the root either in a pipe or prepared as a cigarette. It is undoubtedly true that this measure in some persons acts like a charm, and may be confidently relied upon as a prompt and effectual mode of obtaining relief; but in the majority of cases it either produces no effect or merely mitigates the severity of the paroxysm. Assa-

Plate A.



AGRIMONY.—*Agrimonia Eupatoria*.



DOGWOOD.—*Cornus Circinnata*.



THOROUGH WORT.—*Eupatorium Perfoliatum*.



ACONITE.—*Aconitum Napellus*.



INDIAN HEMP.—*Cannabis Indica*.



ASPARAGUS.

foetida, dracontium or skunk-cabbage, and the Indian hemp have been found to be sometimes efficacious. The ethers, given internally, are to some extent useful as palliatives, and occasionally produce complete relief.

“Marked relief is frequently obtained, and the paroxysm is sometimes cut short, by nauseant remedies—viz., antimony, ipecacuanha, lobelia inflata, and common tobacco. The two remedies last named are especially efficacious in a certain proportion of cases. The common tobacco will be more likely to be successful if the patient be not accustomed to its use. With a view to the relief of spasm, these remedies need not be carried to the extent of producing vomiting; if not effectual when nausea is induced, it will be useless, if not injurious, to push them further. I have known a paroxysm to be arrested at once by blood-letting, but this is a measure too potent to be employed except occasionally in plethoric persons.

“The inhalation of the vapor of chloroform or ether is a measure of great value in the treatment of asthma. Not unfrequently the paroxysms are completely controlled by it, the patient passing, in the space of a few moments, from a condition of great suffering into one of ease and comfort. These cases are among those which afford the most striking examples of the resources of practical medicine. The dry bronchial rales which, before the inhalation, were loud and universally diffused over the chest, sometimes disappear as soon as complete relief is procured by inhalation, a fact proving conclusively the existence and cessation of spasms. Unhappily this measure, like the others, is only efficacious in a certain proportion of cases. It should be tried always, provided there are no circumstances to contra-indicate it. Its employment should never be intrusted to the hands of the patient.

“It is hardly necessary to say that if there be ground to suppose the attack to have been brought on by overloading the stomach or by constipation, an emetic or cathartic is indicated; and, of course, the patient is to be removed from the action of any known exciting cause, such as the emanations from hay, feathers, etc. The apartment should be large, high, and airy. Warm and stimulating pediluvia are useful as palliatives. Strong coffee, taken hot, is generally highly useful as a palliative. Another palliative measure, which sometimes proves to be curative, is to be added. This consists in diffusing throughout the apartment the fumes of burning nitre-paper—that is, bibulous paper dipped in a saturated solution of the nitrate of potassa, and dried. Some patients find great relief, and occasionally the paroxysms are arrested by this measure.”

The manner of living and habits of people affected with asthma are generally such that they can have very little chance of getting rid of the disease. Indeed, they too frequently adopt the most direct means to prolong their suffering. Knowing their liability to catch cold, and being well aware that a cold or catarrh is generally the prelude to a fit of asthma, they (at least those who have it in their power) shut themselves up in close rooms on the approach of winter, dreading the slightest exposure to cold air. They deprive themselves of exercise, and in consequence indigestion is brought on, the general health is impaired, and life becomes almost a burden. If they do occasionally venture into the open air they return to the same overheated atmosphere or sit near a large fire, not taking into consideration that by far the most common cause of cold is *the sudden change from cold air to an overheated room*. The patient blames the cold air, but the fact is the lungs bear cold well, or an equal temperature, whether cold or hot.

More dependence should be placed in proper regimen than medicine in this disease. Regular exercise in the open air, either on foot or horseback, is absolutely necessary in all seasons, and the means of next importance is cold bathing. In winter the patient should sponge his body every morning, on getting out of bed, with salt water (two tablespoonfuls of salt to each pint of water), rubbing the body well after the ablution with rough towels. The water used should at first be tepid, and then gradually colder until the patient can bear it perfectly cold. In summer, bathing in the sea or the cold shower-bath will be preferable. Cold ablution in winter tends more than anything else to do away with the susceptibility to cold which exists in the catarrhal forms of asthma. After using it regularly for some time, exercise in the open air cannot only be taken in winter with impunity, but with the greatest advantage.

ATAXIA. (See Locomotor Ataxia and Nervous Diseases.)

AUSCULTATION, OR SOUNDING THE CHEST.

This method of studying diseases of the chest was discovered by Laennec in 1816. Laennec himself died of consumption, in the forty-fifth year of his age.

In auscultation the ear of the physician is applied directly to the chest, or to an instrument called a stethoscope, placed against the chest of the patient, through which the sounds are transmitted. (See Stethoscope.)

This method of examining the chest has wrought a great change in the study of diseases of the *heart* and *lungs*. Physicians now rarely attempt to give a positive opinion in any case of suspected disease of the heart or the lungs, without using this method of examination.

The skill and facility that can be obtained in this art by long practice is wonderful.

For those physicians who thoroughly understand it, and who have enjoyed good opportunities for practice in the art, this method of diagnosis is very reliable, and far more satisfactory than the mere study of the general symptoms of the patient.

Auscultation and percussion (see Percussion) together are often sufficient to settle the important question whether a patient is or is not suffering from disease of the heart or lungs, and also to determine the stage of the disease. The subject itself is wide enough to occupy a lifetime.

Auscultation has been sometimes resorted to in order to determine the condition of the intestines, and is also used to detect the beatings of the foetal heart.

BACKACHE.

Backache is a *symptom* of numberless diseases. It is only very rarely the symptom of disease of the spine, or of the spinal cord, or of the kidneys. In order to ascertain what disease it betokens, it must be studied in connection with other symptoms. In the majority of cases it is a symptom of nervous exhaustion. Pain in the "small of the back" is a frequent complaint of dyspeptics. Women often suffer from pain in the lower portion of the back, at the foot of the spine. Difficulties of the womb oftentimes make themselves felt in the back. Whenever a person gets run down from any cause or causes, backache is liable to appear. In such cases the aching is done by the *nerves that issue from the spine*. Such nervous pains I have called *headache in the back*. They come on in the afternoon, or when we are specially wearied. They come when we sit too long, or when we stand too long, or when we lie down too long. They may trouble us even at night.

Backache, then, may be a symptom of all these and many other different conditions :

Nervous exhaustion. (Neurasthenia.)

Dyspepsia, or derangement of the digestive organs.

Diseases of the genital organs.

Diseases of the spine and spinal cord.

Diseases of the kidneys.

The three first-named are, in the great majority of cases, the causes of *backache*.

Besides these *chronic* conditions, it is well known that most of the principal *fevers*—*yellow fever, remittent fever, intermittent, small-pox, etc.*—are ushered in by pain in the back.

Treatment.—The treatment is to treat the *cause*. Cure that, and the symptom will disappear. Great relief may be obtained by *anodyne plasters*. My preference is for those made of *belladonna*.

For more detailed suggestions on this subject, see *Neurasthenia*.

BALDNESS (*Alopecia*).

There are three forms of alopecia or baldness, which differ widely from one another as to their cause and character. (See Plate 10.)

1. The first form of alopecia is simply a thinning of the hair. This frequently follows severe illness, and disappears with complete convalescence. It occurs again in women who are nursing children, and in those whose vital powers are reduced from any cause whatsoever. It is an indication of a general debility rather than a sign of any local affection of the scalp, and is improved by rest, nourishing food, change of scene, and, in fact, whatever tends to tone up the system. Local treatment at the same time is advisable.

The scalp may be washed thoroughly by using the following :

Aromatic spirit of ammonia, 1 part,
Rose-water, 3 parts.

Where there is no dandruff, the roots of the hair may be strengthened by rubbing the scalp with a toothbrush dipped in

Tincture of Spanish flies, 1 part,
Cologne-water, 4 parts.

2. The second form of alopecia is the baldness of age. This is peculiar to the male sex, and in most cases is hereditary. It is not associated with any impairment of the vital powers, and often appears upon men who are still young and in robust health. The vertex or upper part of the head is the portion of scalp usually affected, and this is due to the fact that in this locality there is but little fat to form a cushion for the scalp, and the pressure against the skull shuts off the supply of blood to a certain extent and

causes atrophy of the hair-roots. In women where there is considerable fatty tissue beneath the scalp, baldness does not occur; and in men it will be noted that the hair never falls upon the sides or upon the lower part of the back of the head, since here there are muscles to form a cushion for the scalp.

The cause of baldness, then, is not a disorder of the scalp or of the hair-roots, but an inherited tendency of the scalp to become tightly drawn over the skull through condensation of its subcutaneous cellular tissue.

3. The third form of alopecia is a baldness occurring in spots, and is called *alopecia areata*. At one or more points the hair begins to fall, and a small circular bald spot results. The scalp at this point is neither red nor scurfy, but, on the other hand, presents a smooth white appearance, and feels as soft and velvety as an infant's skin. The bald patch or area, which at first may be as large as a three-cent piece, gradually increases in size by the loss of hair at the margin. Frequently several patches coalesce, and the denuded portion of scalp increases until there are but a few locks of hair left, looking like oases in a desert. Occasionally the scalp becomes as bare as a billiard-ball (see Plate 10), the eyebrows fall, giving to the face a most unnatural expression, and even the whole body in some cases becomes hairless. The affection is not frequently met with, and its nature is rather obscure.

Treatment.—Some cases get well of themselves; and although there is no case which cannot be cured in time, it must be said that the affection is often of extreme obstinacy. As the majority of those affected suffer from some impairment of health, the success of local treatment will usually depend upon the means employed for improving the patient's general condition.

If a patient with *alopecia areata* has a proper amount of nourishing food, with the power to digest and assimilate it, and is free from overwork, grief, care, and other tissue-destroying agencies, a cure can be effected by a vigorous and persistent use of local stimulants.

The patches and the hair around them should be shaved three times a week, and painted night and morning with the tincture of Spanish flies, applied with a camel's-hair brush, or an ointment of turpeth-mineral, of 10 per cent strength, may be rubbed into the affected portions of the scalp. In time soft downy hairs will be seen growing from the patches, and these are commonly of lighter hue than the surrounding hair. It must be remembered that in this form of alopecia the hair-roots are not destroyed, and consequently the hair may grow again as luxuriantly as before. In the

second form of alopecia, already described, there is a destruction of many of the hair-bulbs, and, finally, when the scalp gets smooth and shiny, a hair restorative becomes a mockery. There are some men destined to be bald, and although they may delay the event by careful hygienic treatment of the scalp, the time must come when their only choice will lie between a bald pate and a wig.

BARBADOES LEG. (See Elephantiasis.)

BARBER'S ITCH (*Sycosis*).

This term is applied to several different affections of the bearded portion of the face. The disease known as sycosis consists in an inflammation around the roots of the hairs. (See Plate V.) The affected part becomes swollen and tender. Numerous small pustules appear, each one perforated by a hair, and a yellowish, honey-like crust forms upon the surface of the skin. Sycosis may occupy the whole or a limited portion of the bearded face. It is frequently met with beneath the nose in those who suffer from catarrh, with a profuse, acrid, watery discharge. When salt-rheum (eczema) attacks the beard, it is also called barber's itch. In neither of these cases is the disease contagious, and they should be carefully distinguished from ringworm of the beard (which see), which, being due to the growth of a vegetable parasite, is highly contagious. This affection may be contracted in a barber-shop—not, however, from the use of a public razor, but from the application to the face of a damp and soiled towel.

Treatment.—In every case the hair must be shaven or cut very short with fine scissors. In severe cases, particularly of parasitic origin, the pulling out of the affected hairs is essential to a cure. The disease is usually an obstinate one and demands careful treatment.

BARRENNESS. (See Sterility and Women, Diseases of.)

BED-SORES.

Ulcers and abrasions of the skin caused by lying long in one position in bed. Bed-sores occur in paralysis of various kinds, and sometimes in the treatment of fractures, when long confinement is necessary. (See Ulcers.)

Bed-sores can be prevented by the use of air-cushions. The treatment is adhesive-plaster, glycerine, and alternate applications of ice and hot water in bags or cloths. Galvanization also is a re-

liable means of cure. A good method is the local application of pieces of *zinc* and *copper*. (See Electro-Therapeutics.)

BILIOUS HEADACHE. (See Headache.)

BILIOUS REMITTENT FEVER. (See Remittent Fever.)

BITES.

The bites of poisonous insects, as bees and mosquitoes, are best treated by direct application of *hartshorn* or *liquid ammonia*. To prevent flies in the woods from biting fishermen, use a mixture of equal parts of *tar* and *sweet-oil*. The mixture may be flavored with *pennyroyal*. *Carbolic acid* is also used. The mixture is rubbed occasionally on the face, neck, and hands, and is, as I have found by experience, a good protector. (See Hydrophobia and Snake Bites.)

BLACKHEADS. (See Acne, also Plate V.)

BLADDER, INFLAMMATION OF (*Cystitis*).

The symptoms which characterize acute inflammation of the bladder are heat, tension, and pain more or less severe at the lower part of the belly, which is increased on pressing with the hand over the bladder, or by sneezing, coughing, going to stool, or by any movement of the body. There is great and frequent desire to void the urine, which is high-colored, and passed in a few drops at a time with much pain and difficulty, and sometimes it cannot be discharged at all. As the disease advances, the lower part of the belly appears swollen, in consequence of the space which is taken up by the bladder distended with urine. The slightest pressure there is then insupportable, and the whole abdomen is painful to the touch, the pain extending to the loins and anus, and even shooting down the thighs. When the inflammation has gone to this extent, the skin is hot and dry, the pulse quick and hard, and the tongue dry, with great thirst. If the disease go on increasing, the pulse becomes small and very frequent, hiccough, vomiting, delirium, fainting, and death ensue.

The inflammation, however, may be of any grade. Sometimes it is mild, yielding readily to proper treatment, and continuing but a short time.

Causes.—It may be brought on by a variety of causes, such as stone in the bladder, wounds, blows, irritating injections, the inflammation of gonorrhœa, extended along the urethra or urinary canal to the bladder, boils, swelling of the prostate gland, the internal use of Spanish flies (*cantharides*), allowing the urine to remain too long in the bladder, excess in drinking wine or ardent spirits, long-continued exercise on horseback, particularly if the individual has been unaccustomed to it; inflammation of neighboring parts, as the womb or rectum, the introduction of instruments into the bladder, exposure to cold or sudden changes of temperature, and long-continued compression of the bladder by the head of the child during tedious labor. The sex, also, must be considered as a predisposing cause, men being more liable to this disease than women.

Acute inflammation of the bladder continues from ten to twenty or thirty days, and is in general subdued by the necessary treatment, without leaving any bad symptoms. But sometimes it terminates in ulceration or mortification, or matter is formed which passes off along with the urine, or is discharged into the cavity of the abdomen. These terminations, however, are rare, compared with its not unfrequent sequence, chronic inflammation. When the urine is examined with the microscope we often find evidences of the inflammation.

Treatment.—Warm fomentations should be constantly applied over the lower part of the belly, and the bowels are to be acted on by a full dose of castor-oil, or a clyster of decoction of marsh-mallow or linseed-tea, with an ounce of castor-oil. The diet must be carefully regulated in this as in all other inflammatory diseases.

At the commencement only very small quantities of linseed-tea, or other mucilaginous drink, should be allowed; but when the inflammation is giving way, and the urine begins to be voided more easily, the linseed-tea, or any other demulcent beverage (such as gum-water, prepared by pouring a pint of boiling water on an ounce (32. grams) of gum-arabic), may be given freely, with the addition of from five to ten grains (0.30 to 0.60 grams) of nitre to each pint.

The following prescription is valuable :

Chlorate of potash, half an ounce (or 16 grams),
Water, 1 pint (or 512 grams).

Dose.—A tablespoonful every three hours.

Surgeons often use injections into the bladder.

Eucalyptus globulus, in doses of one drachm (4 grams) of the tincture, is a very valuable remedy in inflammation of the bladder. *Benzoin acid*, in a three-grain (0.18 grams) pill, with glycerine, has in my hands proved very efficacious in this difficulty.

Chronic Cystitis—Chronic Inflammation of the Bladder.—This affection needs mild, unirritating diet, like milk, which sometimes is used exclusively.

A suppository of the following ingredients is excellent :

Powdered camphor, 5 grains (30 centigrams),
 Powdered opium, 2 grains (12 centigrams),
 Extract of belladonna, half a grain (3 centigrams),
 Cocoa butter, sufficient quantity.
 Make one suppository.

BLEEDING FROM THE LUNGS—HEMORRHAGE. (See Spitting of Blood, or Hemorrhage from the Lungs.)

BLEEDING FROM THE NOSE.

This is by far the most common, and entirely the least dangerous hemorrhage. In general it is slight and frequently advantageous to the individual, and is injurious only when it continues too long or recurs too frequently.

Causes.—Bleeding from the nose occurs most frequently in young people with an excess of blood, and in females with suppressed menstruation. The causes which commonly produce it are those which determine the blood too strongly to the head, such as exposure to heat, too full living, excess in drinking intoxicating liquors or strong coffee, long-continued study, anger, or any violent mental excitement, long watching, constipation of the bowels, and suppression of the discharge from piles. It is also caused by wearing the neckcloth or stays too tight, blows on the nose, etc. It comes on from scurvy, in consequence of the blood losing its natural consistence, and also during typhus fever, and sometimes from disease of the heart and liver.

Treatment.—In the majority of cases, bleeding from the nose is salutary. If it go on to such an extent (which it seldom does) as to cause paleness of the face, sickness at stomach, and a sensation as if the patient were about to faint, it then becomes necessary to use means to arrest its progress.

The individual should be exposed to cool air, and his head

should not hang over the basin which receives the blood, but must be kept raised. Pieces of linen dipped in vinegar and water or ice are to be applied over the forehead and temples and round the nose ; nor should the popular remedy be forgotten of placing a large key or piece of cold metal between the clothes and the back. If the bleeding still continue, vinegar and water or iced water should be applied frequently over the head, and the feet and hands placed in warm water containing powdered mustard. Bleeding from the nose seldom resists this treatment, but in the event of its doing so we have still other means in reserve.

Powdered gum-arabic blown into the nostrils by means of a quill will sometimes stop the hemorrhage when every thing else fails. When clotted blood begins to form in the nostrils it should be disturbed as little as possible.

Cold vinegar and water or ice applied to the thighs and genitals has sometimes an excellent effect. A method of arresting bleeding from the nose, which is said to be very effectual, is the following : The patient is to stand up, with the head elevated. The nostril from which the blood flows is to be compressed by the finger, and the corresponding arm to be raised perpendicularly, and to be kept in that position about two minutes ; this in almost all cases has proved sufficient.

Pressure on the small artery by the side and angle of the nose for ten minutes will generally stop bleeding at the nose.

A very valuable combination is the following :

Infusion of digitalis, 2 ounces (64 grams),
Tincture of krameria, 1 ounce (32 grams),
Fluid extract of ergot, 1 ounce (32 grams).

Dose.—One tablespoonful as may be necessary.

BLINDNESS. (See Eye, Diseases of.)

BOILS (*Furuncules*).

A boil begins with a pimple in the skin, which continues to enlarge until it reaches the size of a walnut, though sometimes it does not extend beyond the size of a large pea ; it is of a conical shape, red, or of a purple hue, and hard, with burning heat and great pain. Between the fourth and eighth day it becomes very prominent, and begins to *point* ; a speck of matter may then be seen on the summit, which gradually softens ; the skin at last bursts, and matter mixed with blood is discharged through a small opening. A day or two after this, the core, which is supposed to

be a portion of dead cellular substance, finds its way out of itself, or may be squeezed out, leaving an open cavity, which soon fills up, and heals entirely about the twelfth or fourteenth day.

A boil seldom comes alone ; there are generally several, either at the same time or following one another. Boils may appear on any part of the body, but they commonly form on the face, nape of the neck, inside of the thighs, hips, arm-pits, groin, or near the anus.

Children and people in robust health are most subject to boils ; they often come on without any known cause, and appear more frequently in spring than at any other season. They may be brought on by friction, inattention to keeping the skin clean, or from irritation of the digestive organs, and they sometimes follow fever or inflammatory eruptive diseases. They are very common among sailors, and are by them called " salt-water boils."

Treatment.—It is needless to attempt preventing a boil going on to maturation ; it almost invariably follows the course above described, in spite of every means used to arrest its progress. We should, therefore, endeavor to hasten the maturing process by the application of warm bread-and-milk poultices, or poultices of linseed. In many cases a piece of diachylon-plaster applied over the part, and changed twice a day, will answer better than any thing else. If the boil be of a very indolent character, the application of roasted onions will be of service, or poultices of honey mixed with oatmeal. As soon as it is known that the tumor contains matter, the best plan is to give it vent, by making a free opening with the lancet, and then squeezing out the matter and the core. When the patient is averse to this and allows the boil to burst of itself, the opening is always small, and the core consequently does not readily find its way out. In some cases it requires to be drawn away. In general the cavity heals quickly after the core is discharged, and nothing is required except a little cerate or other simple dressing ; the sore in some cases, however, becomes indolent, and requires dressing of a more stimulating nature, such as

Basilicon, a drachm (4 grams),
Red precipitate, 5 grains (.30 gram). Mix.

A little of this ointment to be applied on a piece of lint or linen rag.

Where there is hardness of the part after the sore is healed, it should be rubbed with camphorated mercurial ointment, night and morning.

Boils can sometimes be aborted by applying this solution of *carbolic acid* :

Carbolic acid, half an ounce (16 grams),
Glycerine, 1 drachm (4 grams).

This is applied after the skin is broken. If no opening is made by the natural course of the boil, make one artificially. This treatment relieves pain, and may cure in three or four days.

The tendency to boils (furunculosis) may be treated by hyposulphite of soda as in this prescription :

Hyposulphite of soda, 20 grains (1.25 grams),
Water, 3 ounces (96 grams).

Take this three times a day.

With regard to the internal treatment, all that is necessary in general is to abridge the diet a little, avoid stimulating food, and keep the bowels open with *Epsom salts* or other cooling purgatives.

BAD BREATH.

Bad breath may be caused by *decayed teeth*, by a *disordered stomach*, by *exhalations from the lungs*, by *ulceration or other disease of the lungs, bronchial tubes, windpipe, throat and nose, or gums*, or by all of these causes combined. The only way to treat bad breath is to remove the *cause* or *causes*. Instead of keeping the mouth filled with antidotes for bad breath, consult some good physician or dentist, or both, and ascertain the cause of your bad breath, and then, if it be possible, let them cure it. Cure the dyspepsia. Extract the decayed teeth. Relieve the catarrh (rhinitis). Give tone and health to the spongy gums.

Bad breath may temporarily arise from eating onions or from drinking spirits, or from tobacco. The cure in such cases is of course very simple—*abstain*.

BLACK VOMIT. (See Yellow Fever.)

INFLAMMATION OF THE BOWELS.

Symptoms.—This disease, when severe, is preceded by general uneasiness, shivering and heat alternately, listlessness, and a feeling of weakness. A sharp pain in the bowels soon follows, with

gripping, and a sensation of internal heat at the seat of the pain, which is generally about the navel. The pain is constant, and is increased by the slightest pressure over the belly, which after some time becomes hot, swollen, and tense. There is great prostration of strength, urgent thirst, sickness at stomach, perhaps vomiting, and constipation of the bowels, though sometimes there is purging of a thin, bilious, stinking matter. The pulse is quick, hard, and small; the urine high-colored, and passed in small quantities; and the tongue is at first white, and becomes afterwards furred and brown in the middle, with its point and edges red. The patient moves his head and arms frequently, and appears very restless, though afraid to move his body, from a dread of increasing the pain; his limbs are drawn up towards his belly, and he can only lie on the back. All these symptoms, however, are not present in every case, and they are, of course, more or less severe according to the extent and severity of the inflammation.

When inflammation of the bowels is about to prove fatal, the pulse becomes exceedingly weak, the features shrink, hiccough and cold sweats come on, and the hands and feet become cold; but when it is about to terminate favorably, the pulse recovers its firmness, the stools become natural, the urine is voided freely, and the pain lessens by degrees.

Causes.—The most common causes of this disease are, exposure to cold when the body is much heated, or drinking cold fluids when in the same state; accumulation of hardened excrements in the bowels; eating too freely of highly-seasoned food, unripe fruit, or crude vegetable substances; excess in drinking; too strong purgatives; blows on the belly; swallowing acrid or poisonous substances; but it may come on without any obvious cause.

Treatment.—1. *Opium in large doses, and frequently.*—This is at present the one remedy for this disease. It is proper to give doses of one or two grains every two or three hours. In this disease the system bears a large amount of opium. It constipates the bowels, but that is of little account. In severe cases enormous doses of opium have been given without injury. No other disease bears so much opium as inflammation of the bowels—in men or in women. We may use morphine or laudanum, if we prefer, instead of the crude opium.

2. *Tonics and stimulants.*—These are to be given when the stage of exhaustion comes on. Quinine may be combined with the opium. Besides, we may give beef-tea, wine, brandy, or whiskey.

When the disease has been subdued, the greatest care must be taken to prevent a relapse. Flannel should be worn next the skin, and the diet should be easy of digestion, and as little stimulating as possible. Wine and spirits should be abstained from for a considerable length of time.

The diseases most likely to be mistaken for inflammation of the bowels are rupture, colic, and affections of the kidney. Rupture may always be suspected ; it is, therefore, necessary to examine carefully both the abdomen and groin. Colic is a spasmodic affection, and commonly requires to be treated with opium, brandy, and other stimulants. The greatest care must, therefore, be taken not to confound it with inflammation of the bowels, in which stimulants would be highly injurious. Colic commences suddenly, and is not attended with fever ; the pain is not constant, as in inflammation of the bowels, and it is rather relieved than otherwise by pressing on the belly. In affections of the kidney, though the patient complain of severe pain in the belly, yet it is not increased by pressure, which is invariably the case in inflammation of the intestines. It is needless to say that this disease needs prompt and good medical advice, if it can be obtained.

CONCUSSION OF THE BRAIN.

Concussion of the brain generally arises from injury done to the head by blows, or from a violent shock received by the whole body, in consequence of falling from a height. When the concussion is very severe, the following are the most marked symptoms : insensibility, without the power of moving ; pulse weak, slow, and perhaps intermitting ; cold extremities ; oppressed breathing, but without snoring ; pupils of the eyes generally contracted. When to these symptoms are added coldness of the whole body, with short and interrupted breathing, a fatal termination is about to take place. But if the system recover and reaction come on, then the pulse becomes regular and stronger, the breathing more natural, and the legs and arms get gradually warmer. If the patient be now spoken to in a sufficiently loud tone of voice, he will answer questions, though not very coherently, and if pinched he will show by moving that he is not insensible to pain. These symptoms may give way by degrees, until at length the patient is left without anything to complain of, except perhaps a headache. This favorable termination, however, does not always follow reaction, which in some cases is very strong, and accompanied by inflamma-

tion of the brain, which, in spite of every treatment, may in a short time end in death. Concussion is more or less severe, according to the injury which the brain has sustained. When the shock is slight and the person only stunned, he remains but a very short time insensible, and then gets up as if nothing had happened ; when more severe, sickness and vomiting follow, and the patient may have his ideas confused, attended with unwillingness to move about for several hours, or perhaps days.

Treatment.—1. *Rest.*—The patient should be taken to a quiet room, and his clothing should be loosened.

2. *Friction.*—The hand or a cloth may be used to restore the circulation.

3. *Mild Stimulants.*—Hartshorn may be held to the nose. A very little wine may be given if the patient can or will swallow. Warm water may be applied to the feet and cold to the head.

4. *Purgatives.*—The bowels are to be kept loose by purgatives such as Epsom salts.

5. *Counter-Irritation.*—Blisters not too large at the back of the neck. These should be repeated a number of times.

6. *Rest and Time.*—The patient cannot get well at once usually, and cannot be forced into health by violent measures.

Sometimes the patient appears to be getting better when really he is worse. The patient should be very slow about returning to the active duties of life.

INFLAMMATION OF THE BRAIN.

Causes.—The usual causes of inflammation of the brain are, injuries done to the head by blows or falls ; great mental excitement ; exposure to excessive heat or cold ; excess in drinking spirituous liquors ; suppression of the menstrual discharge, or of that from piles. It often comes on in the course of fevers, rheumatism, small-pox, scarlatina, and other diseases of the skin, and may be brought on by certain diseases of the ear.

Symptoms.—This disease may come on suddenly, but when not caused by external injuries, there are in general certain symptoms which give notice of its approach—viz., headache, attended by a sensation of weight and fulness of the head, slight giddiness, ringing in the ears, occasional drowsiness, confusion of ideas, irritability of temper, and disturbed sleep. The face is more or less flushed, the head feels hotter than natural, and any unusual noise or strong light annoys the patient.

After chills or shivering, which in general precede all inflammatory diseases, strong symptoms of fever come on. The skin becomes hot, the face much flushed, the eyes red, and the pulse full and hard. The patient is then very restless, and light and the slightest noise are insupportable to him. As the disease advances, the thirst becomes urgent, the tongue white, the urine high-colored, and the bowels constipated. In the majority of cases there is irritability of stomach, accompanied by vomiting. At length spasms of the face and limbs and the most furious delirium come on, and the pupils of the eyes remain contracted. In many cases it is necessary to confine the patient's arms, to keep him from injuring himself or those near him. One or both arms first and then the legs become stiff and contracted, and occasionally convulsed. When the limbs are in this rigid state, any attempt to straighten them, or even any effort on the part of the patient to move in bed, is attended with severe pain.

In the majority of cases inflammation of the brain reaches its height about the third or fourth day, and generally terminates fatally within a week or ten days. It is one of the most dangerous diseases to which man is liable, and even when it has been overcome its effects are of the most serious nature.

Treatment.—1. *Active Purging.*—The bowels may at first be opened with one drop or half a drop of croton oil on the tongue, or by a dose of calterium, or, better still, for the majority of cases, *Epsom salts*.

The bowels should be kept free by medicine during the whole progress of the disease.

2. *Cold to the Head.*—Pounded ice may be placed in a bag and kept on the head. The head may be shaved, so that the ice and water may be more directly applied. Wet cloths are not as good as pounded ice, and when they are used they must be kept constantly wet, else they may do no good, but rather injury.

3. *Warmth to the Feet.*—Mustard-plasters can be applied to the calves of the legs. The feet may be soaked in warm water, and thoroughly rubbed. Sometimes children are benefited by a warm bath.

4. *Blisters to the Scalp.*—These should not be used until the inflammatory stage is over. They should be applied over the entire scalp.

5. *Stimulants and Nutritious Food.*—In the later stages the debility is so marked oftentimes that whiskey, or brandy, or wine, or opium may be needed in addition to nutritious food. In the inflammatory stages the diet should be light.

The recovery needs great care. It is a matter usually of considerable time. Patients should be exhorted to take it easy, and not be in too great haste to return to activity. *In all real or suspected inflammations of the brain, medical advice should, if possible, be obtained without delay.*

BREAK-BONE FEVER OR DENGUE. A term applied in certain districts of the South to a form of ague or chills and fever attended with severe pains in the bones. (See Ague.)

BRIGHT'S DISEASE. (See Kidneys, Diseases of.)

BRONCHITIS.

By this term is meant inflammation of the bronchi or tubes which convey the air into the lungs.

When the windpipe reaches as low down as the third or fourth vertebra of the back, it divides into two great branches, called bronchi, one of which goes to the right and the other to the left lung. These branches having entered the lungs, divide, subdivide, and ramify into innumerable small branches, all of which terminate in very minute bags, called air-cells. These air-tubes and cells are lined with a membrane, termed, from the nature of its secretion, mucous membrane, which is the seat of bronchitis.

Causes.—A most fruitful cause of bronchitis is exposure to cold after the body has been heated by exercise or sitting in a warm room. The theory is advocated by some that cold is caught just as readily by changing suddenly from cold to warm air. When the body has been chilled by long exposure to cold, warmth should be restored by degrees. When a person has been in the cold air, he should remain for some time in a room moderately heated, and avoid at first sitting near the fire. By avoiding sudden changes of temperature any one, however susceptible of catching cold, may take exercise with impunity in the coldest air, provided the surface of the body and feet are kept warm by suitable clothing.

Bronchitis shows itself in two forms, the *acute* and *chronic*.

ACUTE BRONCHITIS.

Symptoms.—After exposure to cold, which is the usual cause of this affection, the mucous membrane which lines the nostrils,

windpipe, and bronchi becomes slightly inflamed. The consequences of this are dryness and stuffing of the nose, hoarseness, dry cough, and a slight degree of fever, soon followed by expectoration of a thin fluid, a feeling of tightness about the chest, and increase of cough. After some time the expectoration becomes very copious and of a much thicker consistence; all the feverish symptoms give way, and in the course of a few days the cough gradually moderates, and the patient recovers. This is a mild form of bronchitis. It is frequently accompanied by cold in the head, is not of a serious nature, and requires very little medical treatment.

Bronchitis, however, does not always appear in this mild form. It presents a variety of grades, from the slightest *common cold* to the most acute inflammation, causing symptoms of a character so urgent as to require the most active treatment to prevent a fatal termination.

When severe it commonly commences with hoarseness, slight sore throat, perhaps cold in the head, and the feverish symptoms which usually precede all acute inflammatory diseases—viz. chilliness or shivering, alternating with flushes of heat, lassitude, unwillingness to move about, and pain (or at least a sensation of soreness) in the back and loins. The pulse is quick and weak, and the urine diminished in quantity. These symptoms are soon followed by headache, hot and dry skin, thirst, foul tongue, quick and full pulse, and scanty urine of a high color. To these general symptoms of fever are added those more peculiar to bronchitis—viz. oppression on the chest, attended with dull pain and heat, a distressing dry cough, and considerable difficulty in breathing. At first there is no expectoration, because the mucous membrane is dry; but as the disease advances, each fit of coughing brings up a thin acrid fluid of a salt taste. As the expectoration increases in quantity, it becomes less acrid and loses its salt taste. It then acquires a thicker consistence, and assumes the appearance of white of egg; is very viscid, and sticks to the sides of the vessel. The more viscid and tenacious it is, the more severe is the inflammation. The feverish and other symptoms become more severe towards evening, and during the night the patient is very restless, and the fits of coughing continue longer and recur more frequently than during the day. About the sixth or seventh day the expectoration begins to grow thicker and more opaque, and the difficulty of breathing and tightness at the chest gradually diminish. At length the expectoration acquires a yellow or greenish color, and is brought up easily, the sensation of heat within the chest is no longer felt, and the cough

is not so frequent or troublesome, except on awakening in the morning, when it continues until the mucus which accumulates in the air-passages during the night is freely discharged.

Bronchitis seldom terminates fatally, unless complicated with other diseases; but when it attacks a great part of the mucous membrane of the air-passages of one or both lungs, and extends to the smallest air-tubes, it is not unattended with danger, and in old people and children frequently proves fatal. In such cases the breathing becomes much oppressed, a wheezing or rattling noise is heard in the chest, and there is great prostration of strength. (See Auscultation.) *Only the experienced physician can determine the meaning of these sounds.* The mucus accumulates in the air-passages, and the patient has no longer strength to cough it up. The face and lips then change from deadly pale to a livid color, the pulse is small and quick, cold clammy sweats break out on the body, the extremities become cold, and the patient sinks. *At the present time the physician, in studying this and all other diseases of the chest—acute and chronic—relies upon his ear more than upon the appearance of the patient.*

Treatment.—1. *To open the pores of the skin and cut short the disease.*—This is best done by the Cold Powder (see Cold Powder). A dose, 3 to 5 grains (or .18 to .30 grams), should be given as early as possible after “taking cold,” and repeated every two or three hours. Double dose at night.

Every hour of delay makes it harder to break up the attack. The powder is best given at night, in a little water. It may also be taken for several nights in succession.

The ordinary *Dover's Powder* should be given when the more agreeable Cold Powder cannot be obtained. It should be given in doses of 5 to 10 grains (or .30 to .60 grams) in water, but it is at best an unpleasant compound.

Besides these powders, it is well to take a brisk purgative of some kind, and it is of little consequence just what substances are used. It is an advantage also to take a hot foot-bath.

2. *To cure the bronchitis after the above attempt to shorten it has failed.*

The principal remedies used during the fever are these:

1. *Tartar emetic.*—One eighth or one quarter of a grain (8 to 15 milligrams) every three or four hours.

2. *Blister over the breast-bone or friction with croton oil.*

Milder cases may be treated differently:

1. *Warm and soothing drinks.*

2. *The following prescription for an expectorant :*

Syrup of ipecac,
Syrup of squills, equal parts.

Half a teaspoonful every two or three hours.

When the cough is very agonizing, a *little* laudanum, or paregoric, or morphine may be added to this mixture.

Expectorants are *uncertain* medicines.

3. *Inhalations of tar-water, or simply steam of water.*

4. *Stimulants, tonics, and nourishing food.*—When the stage of debility comes it is necessary to sustain the system by abundance of good food—eggs, fresh meat, beef-tea, etc.—by whiskey, and the bitter tonics and wine.

Chronic bronchitis may be mistaken for consumption, and consumption may be mistaken for chronic bronchitis.—In a doubtful case there is only one way to settle the question. Consult some educated physician who is accustomed to sound the chest. It is only by actual examination of the chest that we can tell accurately whether a patient has consumption or chronic bronchitis. The general symptoms of cough, poor appetite, paleness, weakness, and night-sweats, etc., do not settle the question ; but in the present state of science it is possible for a physician practised in auscultation to determine certainly whether a patient has consumption or simply chronic bronchitis. *The question is a very serious one.* Charlatans grow rich by prescribing for patients with chronic bronchitis who imagine they have consumption. Thousands of patients are cured of chronic bronchitis by quack medicines—or rather get well while they are taking them or in spite of them—who suppose that they are cured of consumption. Thousands of certificates of cures of consumption are continually published by patients who never had consumption at all.

On the other hand, thousands of patients are annually dying of consumption, who, until perhaps the very latest stages, never suspected or admitted that they were suffering from any thing more than chronic bronchitis.

The true course for the patient who is harassed by a lingering cough and night-sweats is to consult some skilful physician and abide by his decision.

CHRONIC BRONCHITIS.

Symptoms.—Chronic bronchitis is almost invariably the result

of the acute form, and is generally met with among old people and those of weak habit of body. It differs from the acute form merely in the mildness of its symptoms and in its longer duration. There is cough and profuse expectoration of an opaque, white, yellow, or greenish matter, of a loose consistence, not resembling the viscid discharge of the first stage of the acute form. In many cases there is a slight degree of feverish excitement during the day, which increases a little towards night; but fever is not a characteristic symptom of the chronic form, unless in the worst cases, when it comes on in the evening, followed by night-sweats and other hectic symptoms. The cough is most troublesome during the day, and on awaking in the morning it continues for an hour or two, followed by very copious expectoration. One may labor under chronic bronchitis for years without the general health being much impaired, but in most cases, when it continues long, habitual shortness of breathing, wheezing, and oppression in the chest ensue; and these symptoms are aggravated on going upstairs, or in using any particular personal exertion. With many persons chronic bronchitis is of so mild a character that they scarcely consider it a disease. In other cases, the patients are completely worn out by the cough and excessive expectoration.

Treatment.—1. *Tonics and Stimulants.*—The elixir of quinine, strychnine, and iron, or any of the ordinary tonic mixtures, will serve the purpose. Arsenic (Fowler's Solution) is good. *Central galvanization* is useful where it can be employed. Cod-liver oil is valuable here, as it is also in consumption. Pure air, sunlight, and sleep are indispensable.

2. *Counter-irritation over the chest.*—This is done by croton-oil, or pitch-plaster, or mustard-plaster.

3. *Inhalations* of carbolic acid, creosote, tar-water, muriate of ammonia, chlorate of potash. (For doses, etc., see Inhalations.)

4. *Expectorant medicines.*—These are uncertain. Any one of the hundreds of prescriptions may be tried. No one is a *specific*. There is a vast amount of *humbuggery* in the use of expectorants.

5. *Change of air.*—Going to a warm climate for a few months is often useful, but frequently disappoints us.

The patient must wear warm clothing, remain at home as much as possible, avoid changes of temperature, live sparingly, and abstain from all stimulating liquors. To relieve the cough and assist expectoration, the following mixtures may be found useful:

Squill vinegar, $1\frac{1}{2}$ ounces (48 grams),
Tincture of henbane, 2 drachms (8 grams),
Mucilage of gum arabic, $2\frac{1}{2}$ ounces (80 grams),

Syrup of orange-peel, honey, or common syrup, $1\frac{1}{2}$ ounces (48 grams),
Peppermint-water, 6 ounces (192 grams). Mix.

Dose. —A table-spoonful four or five times in the course of the day, or at any time when the cough is troublesome. Or,

Almond emulsion, 8 ounces (256 grams),
Acetate of morphia, $\frac{1}{2}$ grain (.03 gram). Mix.

Dose. —A tablespoonful four or five times a day, and two tablespoonfuls at bedtime. Or,

Almond oil, $\frac{1}{2}$ ounce (16 grams),
Solution of the carbonate of potash, $\frac{1}{2}$ drachm (2 grams),
Syrup of tolu, 1 ounce (32 grams),
Syrup of poppies, 1 ounce (32 grams),
Water, 5 or 6 ounces (150 or 192 grams). Mix.

Dose. —Two table-spoonfuls to be taken several times in the course of the day, or when the cough is troublesome.

One of the very best remedies for cough depending on chronic bronchitis, and, indeed, for diseases of the lungs and bronchial tubes generally, is *muriate of ammonia*. This may be given in doses of from five to ten or fifteen grains (.62 or .93 grams), as in the following prescription :

Muriate of ammonia, 1 ounce (32 grams),
Syrup of wild cherry, 6 ounces (192 grams),
Syrup of tolu, 4 ounces (128 grams),
Water, 1 ounce (32 grams).

Dose. —One teaspoonful in one half tumbler of water, four times daily. The dose may be doubled if necessary.

The constant use of cough mixtures, composed principally of expectorant remedies, such as squill, ammoniac, etc., can only tend to debilitate and weaken the patients. Small and frequently repeated doses of anodyne remedies should be administered to mitigate the cough, and thereby diminish the irritation ; and though this treatment can only be considered as palliative, it gives considerable relief. We ought to remember that every anodyne medicine loses its effect after a time ; consequently it becomes necessary either to increase the dose, or have recourse to another remedy of the same class.

Concerning the use of remedies in bronchitis, Professor Flint thus remarks : “ Medicines may be employed with a view to palli-

ation and cure. If cough be troublesome, exceeding the amount requisite for expectoration, soothing remedies are called for. Opium, however, is to be prescribed with circumspection, in the first place, lest the habit of using it be formed. This is a consideration to be taken into account in all chronic affections. And, in the second place, in feeble subjects, and under circumstances in which there may be danger from an accumulation in the tubes, serious consequences may sometimes follow the blunting of that sense of the presence of morbid products which leads to their removal by efforts of expectoration. Moreover, the use of opium tends to impair the digestive powers. For this reason, other anodynes, such as hyoscyamus, conium, belladonna, and hydrocyanic acid are generally to be preferred.

“As a rule, the remedies which are given as expectorants are not indicated. The nauseant expectorants do harm by their depressing effect, and by disturbing the appetite and digestion. The stimulant expectorants, such as squill, senega, etc., are of doubtful efficacy, and, if not useful, are more or less hurtful. Certain remedies, however, sometimes exert a curative effect. This is true of the balsam of copaiva. I have known this remedy to act almost as a specific; yet, in many cases, it has little or no effect.”

ANODYNE COUGH MIXTURES.

Acetate of morphia, 1 grain (.06 gram), dissolved in a little almond oil,
 Almond emulsion, 3 ounces (96 grams),
 Camphor mixture, the same quantity,
 Mucilage of gum arabic, $\frac{1}{2}$ ounce (16 grams). Mix.

Dose. —A table-spoonful three or four times in the course of the day.

Extract of hemlock and extract of henbane, of each 5 grains (.30 gram),
 Mucilage of gum arabic, 2 drachms (8 grams),
 Spirit of mindererus (solution of the acetate of ammonia), $\frac{1}{2}$ ounce (16 grams),
 Peppermint-water, or common water, 6 ounces (192 grams),
 Syrup of red poppy, 1 drachm (4 grams). The first two ingredients to be well mixed with the mucilage before the others are added.

Dose. —A table-spoonful three or four times a day, or at any time when the cough is troublesome.

Mixture of Gum Ammoniac, etc.

Take of gum ammoniac, one drachm (4 grams),

Water, four ounces (128 grams),

Dissolve, by rubbing in a mortar,

Syrup of squills, two ounces (64 grams),

Paregoric elixir, half an ounce (16 grams). Mix.

DOSE.—A tablespoonful, four times a day. This prescription is also useful in *chronic cough, asthma*, and other pectoral affections attended with a deficient expectoration without acute inflammation, or when there is too copious an expectoration of mucus, caused by debility of the mucous membrane.

The following prescription is both tonic and expectorant :

Sulphate of quinine, 3 drachms (12 grams),

Dilute phosphoric acid, $\frac{1}{2}$ ounce (16 grams),

Syrup of tolu, $\frac{1}{2}$ ounce (16 grams),

Water, 3 ounces (96 grams).

DOSE.—One to three teaspoonfuls four times daily.

The *cod liver oil emulsion* is also of the highest value in this disease. It may be taken for many months.

When there is much digestive disorder use the following :

Muriatic acid, 2 drachms (8 grams),

Nitric acid, 1 drachm (4 grams),

Sulphate of morphine, 10 grains (.62 gram),

Compound tincture of cinchona, 4 ounces (128 grams).

DOSE.—One teaspoonful before meals.

When the stomach is strong and can bear it, the following acts sometimes as a charm :

Copaiba, 2 ounces (64 grams),

Tincture of cubebs, 1 ounce (32 grams),

Sulphate of morphine, 4 grains (.25 gram),

Simple syrup, $1\frac{1}{2}$ ounces (48 grams).

DOSE.—A teaspoonful four times a day.

The *Grindelia* combination is to be recommended also for bronchitis. (See Treatment of Asthma.)

Plate B.



BRYONY — *Bryonia Dioica*.



BURDOCK. *Lappa Minor*.



CNICUS — *Cnicus latifolius*.



CINNAMON. *Cinnamomum*.



BAY BERRY. — *Laurus Nobilis*.



CAVENNE PEPPER — *Capsicum*.

To prevent the recurrence of bronchitis, the patient should guard against changes of temperature as much as possible, take regular exercise in the open air, attend to the state of his bowels, and wear flannel next the skin. Sponging the chest every morning with sea-water, or cold water containing a portion of salt, and in summer bathing in the sea, and the shower-bath, are also excellent preventives of bronchitis.

BRONCHOCELE (*Goitre*).

Bronchocele is a swelling on the fore-part of the neck, caused by a preternatural enlargement of the thyroid gland, one of the cartilages of the larynx. In England it is generally called *Derbyshire neck*, and in France and Switzerland is known by the name of *goitre*. The swelling, in its simple state, presents a smooth surface; the skin which covers the tumor is not discolored, and is neither painful nor tender when touched. In the more complicated cases the neighboring parts become affected, and the swelling sometimes increases to a great extent, causing a shocking deformity. In some individuals it hangs down over the upper part of the breast, and in others it rises as high as the ears. When the tumor is large it presses on the windpipe, and causes hoarseness of voice and impedes the breathing; the jugular veins being also compressed, the free circulation of the blood in the head cannot be carried on, and the consequences are headache, drowsiness, giddiness, and sometimes apoplexy.

Bronchocele is very seldom attended with danger; it may continue for years, and even throughout life, without causing pain or much inconvenience. There are no doubt cases occasionally in which inflammation comes on; the tumor then becomes hot and painful, the skin covering it assumes a red and shining appearance, and the veins running under the skin are much enlarged. In scrofulous persons matter has even been known to form and find vent externally. Scrofula, however, does not appear to be particularly connected with this disease.

Causes.—The various opinions started respecting the cause of bronchocele, when closely examined, appear so doubtful and contradictory, that we are left, after all the inquiries and observations made with regard to it, as ignorant of its origin as we are of the use of the thyroid gland, where the complaint is seated.

Treatment.—Iodine, if judiciously used, is one of the best of remedies for this trouble, but it often fails. This should be given

in small doses frequently repeated. It is then perfectly safe ; but if given in too large doses, or carried too far, it brings on lowness of spirits, loss of appetite, dimness of sight, nervous irritability, and palpitation of the heart, or it may irritate the stomach and produce purging. If the patient complain of heat of the stomach and griping, the iodine should be discontinued for a day or two, or the dose may be diminished ; these effects, however, are very seldom produced when the following preparation is given as here directed :

Hydriodate of potash, 36 grains (2.25 grams),
Iodine, 10 grains (.62 gram),
Distilled water, 10 ounces (320 grams). Mix.

DOSE.—Five drops in water three times a day ; gradually increase to twenty or thirty drops.

As an external application, use the following ointment :

Hydriodate (or iodide) of potash, $\frac{1}{2}$ drachm (2 grams),
Lard, 1 to $1\frac{1}{2}$ ounces (32 to 48 grams). Mix.

A drachm of this is to be well rubbed in over the surface of the tumor night and morning.

Or a liniment composed of

Tincture of iodine, 1 drachm (4 grams),
Compound soap liniment, 1 ounce (32 grams). Mix.

In some cases the skin covering the tumor is irritated by the iodine ointment, and a considerable degree of inflammation takes place. When this occurs the ointment should be discontinued, and the inflammation reduced by the application of six or seven leeches to the part, to be followed by poultices of warm bread or linseed.

In some cases bronchocele or goitre yields to iodine in the course of a month or two ; in others it is necessary to keep the system under its influence during ten or twelve months before a cure can be effected.

Electrolysis—that is, decomposition by needles connected with the poles of a galvanic battery—is one of the best of all the remedies ever employed for the treatment of goitre. I have cured a number of cases in this way. This mode of treatment is not painful to any great degree when properly used, and does not always require anesthesia. In some cases the tumor goes down one half or

three quarters and there remains. The unpleasant and serious symptoms of difficulty of breathing and of swallowing caused by the pressure of the tumor on the throat and windpipe are always quickly relieved by electrolysis, and even by external application of electricity. (See Electrolysis.)

A seton placed in the skin over the bronchocele has sometimes the effect of curing it when iodine fails ; but if the tumor be very hard or partly ossified, neither of these remedies produces any good effect. The diet ought to be of a sufficiently substantial and nutritive quality, since this disease generally occurs in delicate females of relaxed constitutions. Bronchocele has disappeared entirely in many cases, particularly in young people, from change of residence alone. In others it has been cured by simply rubbing the tumor two or three times a day (a quarter of an hour or twenty minutes each time) with a dry towel, or with a little camphor liniment. The swelling must be always carefully covered, so as to prevent its being acted on by sudden changes of temperature.

Ergot.—The fluid extract of ergot in doses of half a teaspoonful sometimes causes tumors of this kind to shrink in size. Much more effective is injection hypodermically (with the hypodermic syringe) of ten or fifteen drops of the fluid extract of *ergot*. I have sometimes combined this treatment with electrolysis.

BRONZED SKIN. (See Addison's Disease.)

BRUISES, CONTUSIONS, ABRASIONS OF THE SKIN.

When the skin has been accidentally ruffled or grazed, the injured part should be carefully washed with tepid water, in order to remove any sand or other impurity from the abraded surface. It should then be bathed with spirit and water until the pain has in some measure subsided.

To protect the part from the air and prevent inflammation, a piece of folded lint, or soft linen rag, moistened with water, should then be applied, and covered with a piece of oiled silk, to retain the moisture. *Glycerine* is an excellent application.

Sometimes warm poultices will be found to give more relief than cold applications. The *application of strips of adhesive plaster is often perfectly curative*.

BUNYONS.

A bunion is a swelling on the inside of the first joint (or ball, as it is commonly called) of the great toe, caused by the pressure of tight boots or shoes. The same term, however, is sometimes applied to a similar swelling on the first joint of the little toe, or on the instep. Those who are troubled with bunions have generally the great toes turned outwards, and the little toes inwards, to an unnatural extent. This almost invariably arises from wearing boots or shoes too narrow at the extremities, thereby causing the toes to be squeezed in an improper position against each other.

Treatment.—Since a bunion is caused by undue pressure, the pressure, of course, should be removed. The necessity, therefore, of wearing loose boots or shoes is obvious. They should be without high heels, which would cause improper pressure on the forepart of the foot, and made of cloth or of buckskin, or some other soft leather, and so constructed as to allow ample room at the parts corresponding to the bunions.

When a bunion is not inflamed, the pressure may be, in a great measure, removed by applying over it and the surrounding parts a piece of thin linen or silk, spread with diachylon plaster, and over the latter a piece of thick buckskin leather of the same dimensions, likewise covered with diachylon, perforated with a hole of the size of the bunion. The pressure is thus removed and thrown on the adjacent parts. This method of treatment may be assisted by having the sole of the shoe considerably thicker towards the inside of the foot.

Wearing a new shoe, or one tighter than usual, much walking, particularly in warm weather, or other causes, may bring on inflammation in the bunion, which then becomes so painful that the slightest pressure cannot be tolerated. In this case use warm linseed poultices and warm fomentations, and apply leeches to the surrounding parts. But it sometimes happens that, notwithstanding these remedies, matter forms, and the lancet is required to give vent to it. The application of iodine ointment, prepared as follows, has often an excellent effect in relieving an inflamed bunion :

Iodine, 12 grains (.75 gram),

Lard, or spermaceti ointment, $\frac{1}{2}$ ounce (16 grams). Mix.

A small portion of this ointment is to be rubbed gently on the bunion twice or thrice a day.

BURNS AND SCALDS.

It becomes every one to know how to act in case of such accidents, because burns are inflicted suddenly, medical men are not always at hand, and yet it is necessary to do something immediately to relieve the acute pain which follows these injuries.

The want of presence of mind at the time of the accident often renders burns more severe than they otherwise would be.

Treatment.—The principle on which burns are now treated is that of excluding them from the air ; which may be done by covering the burned or scalded parts with flour, or enveloping them with cotton-wool.

When the legs and feet are scalded, they should be plunged as soon as possible into cold water, and kept immersed in it a considerable length of time before the stockings are removed. By this means blisters are often prevented.

The blisters, or vesicles, which frequently make their appearance suddenly in consequence of a burn or scald, should be punctured with a needle, and the fluid allowed to escape. The burned parts are afterwards to be carefully washed with tepid water before applying flour or cotton.

The application of flour to burned and scalded parts has long been popular. This method is preferable to the use of cotton, inasmuch as the flour relieves the pain almost as soon as it is applied, thus rendering the application of cold lotions unnecessary.

In cases of deep burns, treated either by cotton or flour, it becomes necessary to remove the dressing and examine the parts about once a week, until the sloughs have separated, and the subsequent discharge of matter is diminished. After the dead parts have been detached, it is often found difficult to keep down proud flesh ; in such cases pressure over the dressing by means of sheet-lead has an excellent effect when properly graduated. The principal advantage derived from cotton or flour is during the acute stage ; and therefore, when the crust or paste formed in the manner above mentioned is detached from the ulcerated surface, the ulcers may either be treated by astringent lotions, pressure, keeping the proud flesh under by touching it with lunar caustic or blue vitriol, and the other means in general use in such cases (see Ulcers), or the flour or cotton may be reapplied and removed every six or eight days until a cure is effected.

The dressings should be changed quickly, so that the parts may

be exposed as little as possible to the air ; and when the burned surface is extensive, it must not be all exposed at once. *Another excellent remedy for burns is carbolic acid.* It may be used in solution—ten to twenty grains (.62 to 1.25 grams) to the ounce (32 grams) of water.

A more recent and always handy remedy is the application of common baking soda dissolved in water.

In whatever manner burns may be treated, the greatest care must be taken to prevent contractions of joints and improper adhesions between the raw surfaces. The position ought always to be such as to keep the skin extended.

In slight burns no internal treatment is necessary, repose and low diet are sufficient ; but in severe cases, when there is shivering or a tendency to it, and the patient complains of being cold, and has sickness at stomach, a pale countenance, and weak pulse, stimulants are indicated ; a little brandy or wine and warm water, with six or eight drops of laudanum, are to be given occasionally ; and bottles of hot water, or hot bricks, are to be applied to the feet until the system recovers from the sudden shock which it has received, and reaction takes place. The warm bath is the best thing for restoring reaction in children.

During the inflammatory stage the diet must be very sparing, and confined to vegetables, fruit, and farinaceous substances ; and barley-water, with thirty or forty grains of nitre, may be given in the course of the day, or the patient may drink freely of soda-water, lemonade, or any other cooling beverage. (See Accidents.)

CALCULUS. (See Stone and Gravel.)

CANCER—MALIGNANT TUMORS (*Carcinoma—Epithelioma*).

Cancer is a disease common to both sexes, but women are more subject to it than men. It is not often seen in people under twenty-five years of age, and very rarely before the age of puberty. Women are most frequently attacked after the menstrual discharge has entirely ceased ; but it often occurs in men at an earlier period of life. It may attack any organ of the body ; but in women the breast and womb, and in men the lower lip, stomach, liver, and testicles are the parts most frequently affected.

Causes.—The exciting causes of cancer are *general* and *local*. The most frequent *general* causes are low diet, long-continued trouble of mind, the depressing passions generally, and the suppression of any habitual discharge, such as the menstrual secretion, or

the discharge from piles. The most common *local* causes are blows, or other local injuries, undue pressure, and repeated and long-continued irritation ; but in many cases no cause whatever can be traced. The general opinion, however, is that none of these causes could have any effect in bringing on cancer unless the system were previously disposed to the complaint ; but of the nature of this predisposition we know little—it is probably often hereditary.

The pain of non-malignant tumors is generally aggravated by pressure, while that of cancer is most severe when the patient is perfectly quiet and undisturbed.

CANCER OF THE FEMALE BREAST

Is by far the most common of all cancerous affections ; and the period at which it is usually observed is between forty and fifty years of age.

Symptoms.—It is often a very difficult matter to distinguish between other tumors of the breast and those resulting from the first stage of cancer. The symptoms, however, the most characteristic of a cancerous tumor are, its constant progress, great hardness, irregular shape, and unequal, lobulated, or knobbed surface ; the darting or lancinating pains (though similar pains are sometimes felt in other tumors) ; and, at a more advanced period, the dusky, leaden color and puckered appearance of the skin, and its attachment to the tumor. When a tumor of the breast is felt fluctuating, and the skin is changed in color and feels hotter than natural, it is certainly not of a cancerous nature. Cancer of the breast is influenced by the menstrual discharge during three or four days prior to its occurrence, the pain in the tumor increases, and it is much relieved for several days after that discharge has ceased. An indurated tumor of the breast may exist for years without giving any pain or uneasiness, until the entire cessation of the menses, at which period it becomes increased in size, very painful, acquires all the characters of cancer, and goes on rapidly to a fatal termination. But when the tumor does not appear until some years after that period, and more particularly if not till after sixty years of age, it sometimes progresses slowly, and is accompanied by little pain.

Treatment.—Many tumors of the breast are not of a cancerous nature, are harmless, and may be cured by very simple means ; yet they ought all to be looked upon with the greatest suspicion, particularly if they have originated without any known cause, or have existed for any length of time. No female, on detecting

any unnatural hardness in her breast, should rest satisfied until the necessary means have been adopted to get rid of it. There can be no greater folly than to trifle with a tumor of the breast, whether it may have arisen from a blow, or from a milk abscess, or any other cause.

In this, as in all other cases of incurable disease, it is best to consult some good physician, and have our doubts settled for better or for worse. Any thing is preferable to suspense.

Treatment of Cancer of the Breast.—When the tumor is removed by an operation it usually returns. The propriety of an operation in each case must be determined by some reliable surgeon.

All that we can do usually is :

1. To sustain the general system by nourishing food, tonics and stimulants, and sunlight.

2. To relieve the pain by opium and other anodynes.

The treatment then consists in mitigating the pain, and tranquillizing the nervous system, by means of hemlock and other narcotics ; in dressing the sore with emollient and soothing applications ; in supporting the patient's strength by light nutritious diet, easy of digestion, and by the administration of tonics, the most suitable of which are *quinine* and *arsenic* and *strychnine*.

3. *Electrolysis.*—This method of treatment has proved of great value, especially for the relief of pain. In some cases it arrests the growth. External applications of electricity also wonderfully relieve the pains of cancer.

4. *Arsenic paste.*—Paste composed of arsenic is sometimes used locally for cancer. The method is slow and painful, but sometimes more effective than the knife.

The formula of Dr. Marsden is as follows :

Arsenious acid, 2 drachms (8 grams),
Mucilage of gum-arabic, 1 drachm (4 grams).

Mix with a paste too thick to run.

This should be used only under the direction of a surgeon.

Chloride of zinc is used on the same principle.

Chloride of zinc, 12 grains (.75 gram),
Water, 1 ounce (32 grams).

This is applied freely to the ulcerated surface. *Caustic arrows*, made of *chloride of zinc*, are used for the same purpose, but these methods at best are slow and painful. The same object can be better accomplished by the following method of using electricity.

Electrolysis of the Base.—This method of electrolysis I devised a number of years ago, and have employed with an encouraging degree of success in a number of cases. It is especially successful in that form of cancer known as *epithelioma* of the lips and face.

The patient must first be fully etherized. The method of operating on a *small* tumor is to first insert the needle connected with the positive needle underneath the tumor and near the border. A similar needle connected with the negative pole is inserted also underneath the tumor, and, if possible, at some distance below the base of the growth, so that the point emerges on the opposite side. The current is now gradually let on, and the strength increased until the electrolysis becomes active, as will be indicated by the yellowish form that appears at the negative pole, which becomes gradually loosened. As the action increases, the negative pole may be slowly worked from side to side, with a slight cutting motion, so as to undermine the tumor. The positive meanwhile remains *in situ*; it becomes firmly adherent through oxidation, and need not be removed until the close of the operation.

After the tumor falls off, through the thorough undermining of its base, the base itself can be worked up in all directions with the needles, or with a harrow electrode that I have devised for this purpose. After the removal of the growth, it is well to change the position of the poles in working up the base, so that all parts of the surface may get the benefit of the action peculiar to both poles.

If the tumor is a large one, as an extensive epithelioma, or scirrhous, it is better to have it first removed by the knife. The base can then be worked up in the manner just described.

The cavity after the operation has a charred appearance.

The time required in an operation of this kind ranges between ten minutes and a half or three quarters of an hour.

Little or no pain follows the operation, although the charred appearance of the cavity that has been thoroughly electrolyzed suggests terrible agonies.

Theoretical Arguments in favor of the Method.—The theoretical considerations that bear on this subject are both interesting and important. The theory of the pathology of malignant tumors and the theory of the nature of electricity are both to be considered. My own view of the general pathology of malignant growths is, that the tendency to develop them under the necessary exciting causes—the *diathesis*—is constitutional; and, like all other constitutional tendencies, the tuberculosis or the gouty, for example, is subject to the laws of hereditary descent, with all the exceptions and variations. But diathesis is one thing, disease is another. In order that

diathesis may develop into positive local disease, it is necessary that there should be some irritating or exciting cause. The great exciting causes of malignant tumors appear to be injuries of some kind, and very likely cold and dampness. It is probable that not only the injuries that come from blows and falls, but the irritation of bad food in the alimentary tract, may excite the disease ; and in this way we may perhaps explain the primary cancers of the stomach, liver, and intestines. The majority of cases of epithelioma of the lip, tongue, and face, and of scirrhus of the breast that I have seen trace their disease quite directly to some local injury, as blows or falls. In one patient, an epithelioma of the face developed in an old scar ; in another patient, from a slight cut made by a razor. A man who worked in a carriage manufactory, and who kept tacks in his mouth much of the time, died of epithelioma of the tongue. A cystic of the breast in one case rapidly and directly followed a fall against a corner of a bedpost ; in another case the irritation of the corsets was the assigned cause. Dr. Stephen Smith tells me that he saw a case where scirrhus of the breast was pretty directly traceable to a blow that a lady received on her breast from her husband's elbow while turning in bed. Dr. S. T. Hubbard says that he has seen cases of scirrhus that appeared to be excited by abscesses of the breast. All such statements of patients must, of course, be received with much allowance for error and for careless observations, and yet it seems scarcely possible that so many intelligent patients—most of whom have no theory on the subject—should agree in tracing the origin of the different forms of external cancer to local irritation. Cancers of the rectum, uterus, and vagina could easily be explained on this theory, for these parts are subject to almost constant irritation ; and in confirmation of this view, it has been shown by statistics that the very great majority of cases of cancer of the uterus begin in the neck and not in the body of the organ. Cases of external cancer that are not traceable to any special injury may very likely be excited by exposure to wet or cold, and, in confirmation of this view, Professor E. Andrews, of Chicago, has shown by statistics gathered from the United States statistical returns for twenty years, that the proportion of deaths from cancer diminish pretty regularly as we go West or South—away from the seacoast and towards warm latitudes. Making all allowance for errors in diagnosis (and when a patient dies of external cancer, at least, there is little chance for blunder), and taking into consideration also the facts that the stronger people go West, and there lead less confined and artificial lives than the residents of the East, it seems

necessary to accept the conclusion that cold and dampness may act as exciting causes of cancer, just as they unquestionably act as exciting causes of consumption.

The analogy of consumption is quite an advantage here. The tendency to consumption--the *tuberculous diathesis*--is constitutional, and subject to the laws of hereditary descent. The disease is local, and is, in some cases at least, excited by local irritation. But the tuberculous diathesis is very different from tuberculous disease. Thousands of people with the tuberculous diathesis go through life without ever becoming tuberculous; they either escape the exciting causes or successfully resist them. Just so we may suppose that thousands of people can go through life with the cancerous diathesis without ever developing cancer. A dozen women, we will suppose, fall against a bedpost and injure their breasts; three of the twelve develop scirrhus in the injured breasts, and the other nine, perhaps, never think of the matter afterwards. The three who developed scirrhus have the cancerous diathesis; the nine who do not develop scirrhus have not the cancerous diathesis. If these three had not been injured in that way, or in some other way, they would not have had cancer; the diathesis alone was powerless to develop the disease, just as coal is powerless to make a fire until it is lighted.

The most recent pathological investigations seem to point pretty clearly to the view that cancer is a local disease, and affects the adjacent parts and the general system by actual transfer of the cancer-cells. The disease spreads like a fire on a prairie, in various directions, seizing those tissues on which it can best feed, and sending out patches of morbid substance far in advance of the border of the tumor. Thus it happens that cancer-cells are found not only in and around a cancer, but, at a distance from it, little islands of cancer-cells appear, surrounded on all sides by healthy tissue.

We must, therefore, fight cancer as we fight a great fire, not by useless efforts to save the part already destroyed, but by drawing a cordon around it, between it and the healthy tissue, and cutting off its communication even at the expense of the healthy tissue.

If we accept these views, we must also accept the view that cancer, *whatever constitutional treatment we adopt, should be treated locally, and by some method of local treatment that acts not only on the body of the tumor, but also and especially on the surrounding tissue, and that the earlier such treatment is used the better the prognosis.*

CANCER OF THE STOMACH.

Women are most liable to cancer of the breast ; men to cancer of the stomach, which is equally to be dreaded, since the latter form is also invariably fatal in its termination. It is usually brought on from blows over the stomach and other external injuries, long-continued excess in eating and drinking, distress of mind, and hereditary disposition. It is seldom met with before the age of thirty, and is in general a disease of advanced life.

Symptoms.—This form of cancer commences with uneasiness at stomach without pain, heartburn, eructations, and other symptoms of indigestion ; and it cannot at first, and even for several months, in many cases, be distinguished from that complaint. After a longer or shorter period, however, the symptoms of cancer become so decided that there can be no longer any doubt with regard to the nature of the case. Shooting pains are felt at times extending to the back and loins ; the mind becomes much dejected and the body emaciated ; sickness and vomiting are experienced from the slightest error in diet. The parts of the stomach most frequently affected with cancer are the *pyloric*, or lower opening leading to the gut ; and the *cardiac*, or upper opening, where the gullet terminates. When the lower orifice, which is more frequently the seat of this disease than the body of the stomach, or its upper orifice, is affected, the pain is much increased about three or four hours after taking food ; sickness then comes on, followed by vomiting, which relieves the patient for a time ; but if the disease be at the upper orifice, the pain is severely felt as soon as the food has passed down the gullet ; from the irritation produced, the food is frequently returned almost immediately ; when, however, it has entered the stomach the pain ceases. Some patients, rather than be subjected to this kind of torture, almost starve themselves. When these apertures are in a state of health, and the cancer is situated in the body of the stomach, the food enters without inconvenience, but gives great pain shortly afterwards, and vomiting frequently follows. At this stage of the disease the pain is increased on pressure over the stomach, and in many cases a hard swelling may be felt. To these symptoms are added obstinate costiveness, thirst, feverish restlessness during the night ; and, in some cases, the stomach retains the food which has just been swallowed, and rejects that which had been taken the day before ; in others it accumulates during several days, until at last the stomach becomes so distended that free vomiting of the half-digested aliment, mixed with watery or ropy mucus, takes place.

At first there is considerable difficulty in detecting this disease,

inasmuch as the pain may not be of a lancinating or stinging kind, and the vomiting not regular ; and though there may be acid eructations, fetid breath, flatulence, distention and a feeling of weight at the stomach, and occasional vomiting, yet all these symptoms might arise from other causes. But when the more marked signs already enumerated are present, particularly when there is vomiting of a fetid, dark-colored matter, resembling coffee-grounds or chocolate, and when a hard tumor can be felt between the false ribs of the right side and the navel, which changes its position to a certain extent, according as the stomach is full or empty, there can then be no doubt with regard to the nature of the disease.

Cancer of the stomach is very irregular in its progress ; sometimes the symptoms are much relieved for a time, and the patient thinks he is getting better ; in some cases it advances rapidly, and terminates fatally within a few months ; in others, it continues during many years.

This disease does not usually occur before forty years of age.

The patient is usually starved to death in the course of one or two years.

Treatment.—There is no treatment for this disease. He should be nourished by beef-tea, milk, wine-whey, and stimulants. It may be necessary in some cases to inject the fluid food into the rectum.

The pain should be relieved by the use of opium, henbane, and chloroform, and the *external application of galvanism*, which relieves speedily in the majority of cases.

In these incurable diseases we are justified in using anodynes in just as large doses as may be found necessary to relieve pain and procure sleep. All that we can do in cancer of the stomach is, then :

1. To sustain the strength by appropriate nourishment.
2. To relieve pain by anodynes.

Since cancer of the stomach cannot be distinguished at first from disorders of that organ, of a slow, inflammatory nature, it follows that the treatment, as long as there is any doubt existing, should be directed towards a radical cure, and not to merely palliating the symptoms. A rigorous and properly regulated diet is at this early period the chief means to be relied on. The patient must confine himself to food of a mild nature, and every thing which would excite the stomach or increase the irritation should be strictly avoided. Milk in most cases answers better than any thing else ; some stomachs, however, cannot support it. When milk turns acid on the stomach, it is of course unsuitable. In some cases a little ani-

mal food, properly masticated, is most easily digested ; in others, liquid diet, such as mutton-broth, veal-broth, and beef-tea, is more suitable. But, in general, arrowroot, tapioca, sago, blanc-mange of rice, the preparation of oats, well known in Scotland under the name of *sowens*, and other mild farinaceous substances, taken in small quantities at a time, will be found to produce the least irritation. Animal jellies in small quantities may be tried ; and there can be no better article of diet than asses' milk, when it agrees with the stomach. The object is to give the stomach as little work to perform as possible, and to avoid irritation by improper food ; nor should it ever be overcharged with any kind of food, since we know that when in a disordered state it cannot carry on the process of digestion as in health ; and half-digested aliment must of course act as a source of irritation. The drinks to which the patient should give the preference are, lemonade, orgeat, barley-water, a decoction of liquorice, and linseed-tea.

CANCER OF THE WOMB.

When cancer attacks the hollow organs or cavities, it begins almost invariably at their openings, as the lips, the upper and lower openings of the stomach, the fundament, and the mouth of the womb. The body of the latter organ is very seldom primarily affected ; its mouth and neck first become gradually indurated and enlarged, and the symptoms at this stage are so obscure that the individual may be a considerable length of time without knowing that any diseased action is going on. But when the second or ulcerated stage has begun, the symptoms are sufficiently apparent. No cause can be assigned for this disease ; it attacks the married and unmarried, and may commence at any age after puberty ; but the period at which it usually begins is a little before or after the turn of life.

Symptoms.—In general the first symptom that alarms the patient is a more or less profuse flooding, recurring at irregular intervals, which is preceded or followed by the discharge called the whites. This discharge after some time acquires a fetid smell and becomes thin, and brown or greenish in its appearance. A disagreeable sensation of weight soon begins to be experienced at the lower part of the belly, accompanied with occasional pains of a bearing down or aching kind. The patient at this time may retain her usual strength and appearance, but by degrees her limbs waste and lose their natural plumpness, though the face may appear very little changed, and she complains of an aching sensation and weak-

ness about her loins. As the disease goes on the emaciation and debility increase, the face appears shrunk and deadly pale, or of a pale straw color; dull, dragging, burning, and lancinating pains are felt at the lower parts of the belly and back, extending to the groins and thighs, the urine requires to be frequently discharged, and there is considerable pain attending the evacuation of the bowels. At a still later period of the disease all the symptoms are aggravated; the pain without the aid of strong anodyne remedies would be intolerable; the peculiar smell from the matter discharged is almost insupportable; the stomach becomes very irritable, frequent vomiting harasses the patient; and the debility is often greatly increased by frequent discharges of blood from the genitals. The patient being no longer able to withstand the pain, hectic fever, and want of sleep, sinks from exhaustion, or she may perish from a profuse discharge of blood. Sometimes the cancer eats its way both into the bladder and bowels; the urine and excrements are then mixed with the cancerous matter, and are discharged involuntarily. This deplorable state, however, cannot exist long; inflammation soon follows, and puts an end to the patient's suffering. The length of time required by this disease to run its course is very variable; in general, the younger the patient is the quicker it carries on its ravages; but it may remain in the occult or scirrhus state during several years.

We have already mentioned that cancer of the womb commonly commences with flooding, but this symptom is not peculiar to it; the disease may arise from polypus or other tumors of the womb, or from chronic inflammation of the same part, attended with softening. But when any unnatural discharge of blood takes place between the periods of the menstrual discharge, or after its final cessation, no time should be lost in seeking the best medical advice.

Great relief may be obtained by the judicious administration of narcotics, and the patient may be rendered comparatively comfortable by thorough cleanliness and the free use of disinfectants.

The removal of the diseased growth by a surgical operation is sometimes advisable in the early stages of the malady, but this is a matter that must be left to the decision of competent authority in each individual case.

Treatment.—Prof. Thomas, one of our best authorities on diseases of women, gives the following suggestions for those who are afflicted with this malady:

“The relief of pain should be accomplished by the free, unrestricted use of opium by the mouth, the rectum, the vagina, or under the skin. I often encourage my patients to become opium-

eaters, and urge them to obtain as complete relief as the use of this drug can afford. In place of opium other narcotics may be tried, but there is none which compares with it for efficiency.

“ When opium produces the painful results noticed where an idiosyncrasy exists against it, the persistent use of it will often effect a tolerance.

“ The fetor of the discharges may be, to a great extent, corrected by the use of vaginal injections containing disinfectant substances in solution. Solution of carbolic acid from one to two drachms (4 to 8 grams) to a pint (512 grams) of water, Labarraque’s solution of soda in the same proportion, one drachm of powdered persulphate of iron to the pint, or a weak solution of the iodide of lead, will prove very useful. Of all these, carbolic acid is the most certain and effectual.

“ The general strength should meantime be maintained by fresh air, residence in the country, generous food, alcoholic stimulants, iron and bitter tonics, while the mind should be kept cheerful by lively company and avoidance of the society of those who encourage conversation concerning the existing disease. As the digestion is weak, the most digestible substances should constitute the staple diet; and very often a patient who will become emaciated upon solid food and a mixed diet will improve upon the exclusive use of milk, beef-tea, and similar substances. So marked is this fact, that the milk diet strictly adhered to has been regarded, and is now by many non-professional persons, as a cure for cancer.”

Epithelioma.—This is a form of cancer that attacks the face and lips, tongue and womb. (See Plate VII.)

On the face and lips it is more curable than any other form of cancer. (See Electrolysis; also see Smoker’s Cancer.)

CANKER (*Cancrum Oris*). (See Mouth, Diseases of.)

CARBUNCLE (*Anthrax*).

Symptoms.—Carbuncle may appear without constitutional disturbance, but in general it is preceded by loss of appetite, foul tongue, headache, lassitude, general uneasiness, and shivering. At first it can scarcely be distinguished from a common boil, commencing in the form of a pimple, which gradually enlarges and becomes hard, broad, and elevated. The tumor is circumscribed and flat, the skin of a dark red or violet color; the hardness or firmness which accompanies it is compared to that of brawn; it is hot to the

touch and very painful, with a sensation of burning heat, and a disagreeable feeling of stiffness. A carbuncle may not go beyond the size of a hen's egg, but sometimes it becomes as large as a saucer, or may even attain a diameter of eight or nine inches. The accompanying symptoms are, hot skin, thirst, severe headache, restlessness, high-colored urine, and other feverish symptoms. When left to itself it softens at the most prominent part, and little vesicles or bladders form, which burst and discharge a small quantity of a bloody, badly formed, and fetid matter. The softening goes on, the openings increase in number, enlarge, and run into each other. The matter now discharged has an appearance which Sir Astley Cooper says is peculiar to carbuncle, and which he compares to flour and water mixed together. The skin between the openings is gradually destroyed and sloughs off, allowing the cellular substance or fat which the tumor contains to be easily seen. This substance is in a state of mortification, though it does not appear black, in consequence of being saturated with matter which gives it a grayish or ash color. The smell exhaled is strong and very disagreeable. Carbuncle commonly goes on to mortification in the course of ten days from its commencement, and the dead parts are thrown off towards the end of the fourth week, leaving a deep cavity which requires a considerable length of time to fill up and heal. An ugly cicatrix is invariably left.

Children and robust people are most subject to boils, several of which may exist at the same time ; but carbuncle appears alone, and elderly people whose constitutions have been impaired by improper living are most subject to it. Carbuncles are seldom seen on the limbs ; the parts which they generally attack are the back, particularly between the shoulder-blades, the loins, the nape of the neck, and hips, though they are occasionally met with on the belly and over the chest. Carbuncle generally terminates favorably, but is a disease by no means unaccompanied with danger ; the risk attending it depends upon the age, constitution, and previous habits of the individual, as well as on its size and the part which it attacks.

Treatment.—1. *A few incisions crossways, made early.*

2. The cauterization of the diseased part by nitrate of silver or caustic potash.

3. *Carbolic acid* applied directly through the broken skin to abort them (see Boils). The acid, much diluted, can be applied as a dressing to carbuncles.

4. Poulices of yeast, charcoal, and port-wine.

5. Tonics and stimulants, and nourishing food.

There is frequently great debility and exhaustion. Therefore every means must be used to sustain and strengthen the system.

Give morphine to procure rest at every stage when it is required.

If fungous or proud flesh appear, sprinkle on it a little powdered alum.

CARDIALGIA OR HEARTBURN. (See Stomach, Diseases of.)

CASUALTIES. (See Emergencies, page 399.)

CATALEPSY.

Catalepsy is a disease of the nervous system, of an intermittent nature, and recurring in fits at irregular intervals. It is characterized by the sudden and complete suspension of consciousness and voluntary motion; the body and limbs retaining, throughout the fit, the position in which they were at the moment of the attack, or any other position which may be given to them during its course. Females are most subject to this rare and singular disease.

Hypochondriacal and hysterical women, and those with irritable nervous systems, appear to be most predisposed to this disease. Habitual melancholy, religious enthusiasm, love, great anxiety, extreme sorrow, and other passions which act strongly on the nervous system, are supposed to be predisposing causes. The immediate exciting causes are anger, terror, sudden fright, or any strong mental emotion. In some instances it would appear that catalepsy depended, at least to a certain extent, upon irritation of the brain or spinal marrow, a deranged state of the stomach and bowels, obstruction of the menstrual discharge, and other irritating causes; but individuals have been affected with it in whom no other disease could be detected, though in the majority of cases it seems to have been intimately connected with hysteria. It is not a dangerous disease, but there is reason to believe that in some instances individuals have been buried while in a cataleptic state. (For more extended remarks on this important subject, see Trance.)

Treatment.—This disease is so very rare that the treatment may be dismissed in a few words.

There is no specific for the disease. During the attack little or nothing needs to be done. The patient who is subject to attacks of catalepsy should receive *tonic* treatment—outdoor air, sunlight, nourishing food, plenty of sleep; and internal tonics, such as iron, strychnine, quinine, and arsenic.

Central galvanization and general faradization would be useful in such cases. (See Nervous Diseases and Electro-therapeutics.)

CATARACT. (See Eye, Diseases of.)

CATAMENIA. The menses or monthly courses of women. (See Menstruation, and Women, Diseases of.)

CATARRH OF THE NOSE (*Rhinitis*).

For the past ten or fifteen years there has been scarcely any disease (excepting, perhaps, the venereal) that has brought in so rich and abundant a harvest to charlatans as the inflammations of the nose and pharynx. It is an exceedingly prevalent disease. In almost every family one can find a case, particularly in the northern and eastern part of the country. It has been roughly estimated that 10,000,000 of Americans suffer from catarrh. Gentlemen who in all other matters are prudent, judicious, and reliable, suffer themselves to be robbed in purse and health, if not in life, in order to win a doubtful chance of being relieved of long-standing "catarrhs" at the hands of those who do not even desire to comprehend the simplest principles of pathology.

But that good and true citizens are thus deceived is rather the fault of the profession than of themselves. In the desperation of self-defence, they are compelled to consult those for whose attainments or principles they have no respect.

Although rhinitis is not usually absolutely painful, it is yet in many cases intensely harassing, and embitters existence far more than very many diseases that have called forth the best energies of the profession. It has been stated that rhinitis is a very frequent form of disease. It might be said with propriety that it is universal. Neither sex and no age is free from liability to attacks of acute rhinitis, and at least a majority of those who dwell in our northern climate are affected more or less, at some time of their lives, with the sub-acute or chronic form, though it may not necessarily be so severe or long-continued as to call for treatment.

Causes.—The one great cause is, of course, exposure to cold. Sitting in a draught of air, premature removal of the under-clothing, wetting the feet, and all the various circumstances that conspire to close the pores of the skin, may bring on an acute attack of rhinitis within a few hours.

In the vast majority of cases these attacks pass off either with or without treatment, leaving behind no unpleasant consequences.

But oftentimes one cold follows so closely after another, that the mucous membrane of the nasal passages does not have time to recover its normal condition. Consequently it becomes weakened by repeated attacks, and the inflammation may take on the sub-acute form.

This in turn may pass away, leaving the mucous membrane, however, in a more susceptible state than is natural. But if, on the other hand, the individual be of a scrofulous or delicate habit, with a mucous membrane throughout relaxed and flabby, the inflammation may very slowly go on to the chronic stage, hastened in its advance by each repeated chill. In those of firm, wiry constitutions, however, this chronic stage is not usually reached until after severe and frequently repeated exposure to wet and cold.

The chief predisposing causes are confinement in overheated rooms, and the eating and drinking of hot substances.

Those who labor or idle over registers or near hot stoves are of necessity more susceptible to rhinitis, as well as to pharyngitis and laryngitis, than those who are more active and more uniformly exposed to outdoor temperature. Hot air, continually breathed in against the delicate mucous membrane of the nasal passages, renders it susceptible to acute inflammation whenever the system remains chilled for any length of time.

Exposure to night air is perhaps the most frequent as well as the most powerful exciting cause of rhinitis, and one also that interferes with treatment more than almost any thing else. Those whose occupation compels them to travel much by night, and particularly the *habitués* of late evening amusements, are very liable to suffer from rhinitis, and are very rebellious to any method of treatment so long as they remain unchanged in manner of life.

Smoking has long been a stone of stumbling and rock of offence to those afflicted with inflammation of the lining membrane of the air-passages. Hot smoke has a far more locally relaxing tendency than hot air, and when the two are combined, as always in the act of smoking, the pernicious effects are very marked. A perfectly healthy nose and pharynx, in an adult, is quite hard to find, and in habitual and excessive smokers there is always evidence of more or less chronic inflammation of these parts. Tobold is of the opinion that sitting in a room where much smoking is going on is more injurious to chronic laryngitis than the act of smoking. If this be true (and it is hard to prove or disprove the assertion), then it would seem that fumes of the tobacco-smoke were chemically weakening to the tissues.

Hot drinks, including tea, coffee, liquors, unquestionably predispose to rhinitis, by first affecting the mucous membrane of the pharynx.

The great majority of cases of acute rhinitis, whether accompanied with pharyngitis and laryngitis or not, usually recover in a few days, and the patient goes on and forgets that he was ever afflicted. But now and then one attack supervenes on another so rapidly as to destroy the tone and recuperative power of the mucous membrane, and then the disease falls into the sub-acute and ultimately into the chronic stage.

As a rule, the light-haired, fair-skinned, and delicate are especially liable to this as to every other form of inflammation of mucous membranes; and yet some of the most obstinate cases of chronic rhinitis I have ever treated have been in vigorous, hard-working men, every way healthy in other respects. Farmers, day-laborers, and outdoor mechanics, with powerful lungs and muscles, and who have every function of every other portion of the body performed in absolute harmony, are often the victims of chronic rhinitis. But, as with nearly all other diseases, this also is more frequently the portion of the poor and oppressed than of the cultivated and wealthy. When it attacks the weakly and scrofulous, it is apt to improve with the bettering of the general condition. Therefore children who suffer from rhinitis in early years often "outgrow it," as the grandmothers say, and as they advance to maturity, the enemy may never again disturb them. Cases, however, that ensue after measles and scarlatina are more likely to run a protracted course, and being always associated with pharyngitis, are sometimes difficult to treat, and the results are not as certain or as speedy.

But though the heirs of scrofulous parentage are particularly liable to this form of inflammation in all its stages, it has yet to be proved that there is any direct connection between rhinitis, or pharyngitis even, and tuberculosis of the lungs. The plausible idea that the disease will "work down" is a favorite theme with quacks, and is quite universally dreaded by the masses. But it is, I think, untenable. Pulmonary tuberculosis is very often associated with rhinitis, just as it is with conjunctivitis, but it is no more a consequent in one case than in the other.

What the issue will be in any given case, if entirely let alone, it is impossible to predict, for the disease seems to be a law unto itself. I have known quite severe cases to recover, absolutely and

permanently, without any treatment whatever, even in persons of delicate and susceptible constitutions.

Sometimes there appears to be a changing of the affection from one part to another.

It may remain stationary for years, or slowly grow worse and worse, until in old age it becomes at once incurable and intolerable.

But, after all, the chief thing to be dreaded in rhinitis is the extension of the inflammation into the upper part of the pharynx, and from thence through the eustachian tube into the middle ear, with the long train of pathological results—obstruction of the tubes, chronic inflammation of the middle ear, sinking in of the membrana tympani—and the invariable consequence, *permanent hardness of hearing*. For this reason, if for no other, the attention of physicians should be directed to rhinitis and pharyngitis at their incipience; and these very serious results should be forestalled by appropriate treatment.

After the mucous membrane of the nose has been once affected by chronic inflammation, and has been well cured, it will ever afterwards be more or less susceptible to acute or sub-acute attacks, however careful or judicious the treatment may have been. (For treatment of acute catarrh or common cold, see Cold in the Head.)

Treatment.—The *treatment* of catarrh of the nose consists in the application of very *weak solutions of chlorate of potash, carbolic acid, Lugol's solution, iodine and glycerine, tannin and glycerine, permanganate of potash, and nitric acid*, or other similar substances, by means of the nasal syringe and nasal douche. (See Syringe and Nasal Douche.)

Internally the following prescription of cubebs is recommended by Dr. Beverly Robinson :

Cubebs, 10 ounces (320 grams),
Syrup of orange-peel, 3 ounces (96 grams),
Peppermint-water, 8 ounces (256 grams).

Dose.—Half a teaspoonful every three hours. If the remedy causes diarrhea or an eruption, stop it for a few days.

Common salt (a very weak solution) is perhaps the best of the domestic remedies. Small doses of the Cold Powder are of service also. The patent "*snuffs*" are rarely of service. Long-standing cases of catarrh cannot be cured in this way, but will need persevering treatment with the other substances mentioned above. In ordinary cases nothing *is gained by using painful applications*.

When there is catarrh of the pharynx and the naso-pharyngeal space above and behind the palate, local applications by a surgeon may be needed.

Some cases of chronic catarrh may be complicated with some morbid growth or other serious disease of the nostrils. Those who are so affected should obtain surgical advice.

Those cases that are accompanied by very offensive discharge and bad breath are susceptible of treatment, and may obtain much relief.

Snuffing up *subnitrate of bismuth* is excellent for catarrh. The remedy is entirely safe. *Bismuth*, it may be added, acts well on all the mucous membranes from the nose to the rectum. It is one of the best of our remedies for catarrh of the nose, for dyspepsia, and for piles.

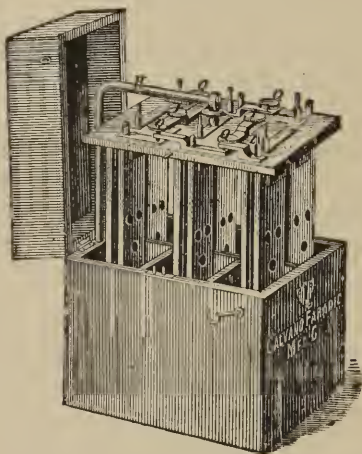
CATARRH OF THE VAGINA, OR LEUCORRHEA. (See Women, Diseases of, also Whites.)

CAUTERY.

The *actual cautery* now much used is the application of some metal, as iron, or steel, or platinum, heated to a red or white heat. It is employed for neuralgia, for headache, for spinal irritation and congestion, indeed, for a large variety of diseases of the nervous system. It is not as painful treatment as is generally believed. The hotter the iron is the less it hurts in the application, for the iron at *white heat* quickly sears and benumbs the part, so that it cannot transmit the sensation of pain. The sore made by a cautery is sometimes kept open by irritating ointments of various kinds.

CENTRAL GALVANIZATION.

A method of using electricity devised by me a number of years since. It consists in the application of the mild galvanic current to the head, neck, and spine. (See Electro-therapeutics.



THE PIFFARD GALVANIC CAUTERY BATTERY.

CHICKEN-POX (*Varicella*.)

This disease has been so seldom met with in grown-up people, that it may be considered as peculiar to children. It is a disorder of very little importance, though at the commencement it is often a source of considerable uneasiness to parents, who think that their children have caught small pox ; and indeed it is sometimes no easy matter to distinguish chicken-pox from the mild or modified small-pox, so frequently observed since the introduction of vaccination.

The eruption of chicken-pox (see Plate IX.) generally makes its appearance without symptoms of fever, though it is not unfrequently preceded by headache, drowsiness, foul tongue, sickness at stomach, and slight increase in the heat of the skin and quickness of the pulse ; but these symptoms seldom continue longer than twenty-four hours. The eruption is generally first observed either on the breast or all over the body at the same time. The pocks are distinct, irregular in shape and size, though for the most part they are oblong, or of an irregularly circular form, and vary from the size of the head of a pin to that of a split pea. They are filled, on the first day of their appearance, with a clear inodorous fluid, are accompanied with a sensation of itching, and there is a red mar-



CHICKEN POX (*Varicella*)

From Life Photographs Series of Dr. Fox.

E. B. TREAT, N.Y. PUBLISHER



SMALL POX (*Variola*)

From Photographs Colored by J. Guertner

DR. F. L. LITTLE & CO. PUBLISHERS, N.Y.



Small, light-colored object



Small, light-colored object

gin round the base of each. On the second or third day, the pocks or vesicles, which are formed merely by the elevation of the scarf-skin, begin to burst of their own accord, or are broken ; and on the third or fourth day the fluid in those that remain entire acquires a straw-colored appearance, and soon dries up, leaving crusts, which crumble away gradually, or fall off in scales about the fifth or sixth day, without leaving pits or any other appearance, except a little redness, which soon disappears. It ought to be remarked, however, that all the eruption does not come out at the same time ; there are successive crops of vesicles, and while some are just appearing, others are in a state of maturity, and at the same time crusts may be here and there observed. During the progress of the eruption the general health is little or not at all affected, the sleep is not disturbed, nor the appetite impaired.

Chicken-pox cannot be propagated by inoculation. It is quite independent of small-pox and vaccination, and may come on before or after them, nor does it in the slightest degree interfere with the regular progress of cow-pox.

Symptoms.—Chicken-pox is a disease of so mild a character that it cannot easily be mistaken for small-pox, which is a very serious, and frequently a fatal, disease. It may be well, however, to point out the difference between it and the mild or modified small-pox, with which it is more likely to be confounded. There is little or no fever before the appearance of chicken-pox ; the skin round the pocks is red ; they are filled with a clear fluid on the first day of their appearance ; and they have neither a hardened base nor central depression, and, when punctured, they fall to the level of the surrounding skin. In modified small-pox there is always fever, accompanied with severe headache, and sometimes delirium, during at least forty-eight hours before the eruption, which appears first on the face in the form of hard pimples, surmounted with small circular vesicles, containing matter, and depressed in the centre. The scabs or crusts are always considerably raised above the level of the skin, and when they fall off leave small hard swellings, which disappear slowly. There is still another distinction between small-pox and chicken-pox : the former, whether modified or not, is highly contagious ; whereas the latter is not considered to be so.

Treatment.—This disease is of so harmless a character that it may be safely left to nature. A little castor-oil, or rhubarb and magnesia, may be given if the bowels be constipated, and the patient should not be allowed to eat animal food for a few days.

CHANGE OF LIFE. (See Cessation of the Menses, and Women, Diseases of.)

CHAPPED HANDS.

Chapped hands are very common and very disagreeable. At certain seasons of the year when high winds blow, some persons are much annoyed by chapping and cracking of the hands, lips, and fingers.

The treatment of this affection is very simple. Use compound tincture of *benzoin*, *glycerine*, equal parts, one, two, or three times a day, as may be convenient. *Glycerine* alone will answer. If we make the application but once a day, let it be before retiring.

Vaseline is also an excellent application for this as for many other disorders of the skin.

Cracked lips are to be treated in the same way as chapped hands.

CHILBLAINS—FROST-BITE—FROZEN LIMBS.

Causes.—Children, females, delicate individuals with fair complexion and tender and irritable skin, and those of a scrofulous habit of body, are most liable to chilblains. They are frequently brought on by the bad habit of sitting near the fire immediately after coming out of a frosty atmosphere, with the feet and hands benumbed from cold; and they are just as likely to be produced by quitting a warm apartment suddenly and going out into the cold air, particularly if the feet and hands happen at the time to be slightly moist from perspiration.

Symptoms.—Chilblain is a name given to a species of inflammation which arises from exposure to a severe degree of cold. The parts most frequently attacked by it are the fingers and toes, particularly the little finger and little toe, and the heels; the extremity of the nose, the tips of the ears, and the cheeks are also sometimes affected with it. A chilblain, in the first or mildest degree, is neither accompanied with pain nor heat, unless the part affected be kept near the fire, or be influenced by the atmosphere of a warm room, and then it becomes only a little warmer than natural, with a peculiar sensation of itching and tingling, which is troublesome and disagreeable, though it cannot be called painful; but there is always more or less swelling of the part, and the skin has a livid or purple color. In the second degree of this affection there is considerable heat, pain, and swelling, and these symptoms are oc-

casionally so severe as to deprive the person of the use of the parts ; the hands of young ladies, for example, are sometimes so swollen and painful that they cannot write or play on the piano-forte, and, in fact, are for a time rendered incapable of doing any thing requiring the free use of the joints. In the third degree, little vesicles or blisters rise on the surface of the chilblain, which break and discharge a thin brownish-colored fluid. A raw surface is thus exposed, and sores are produced which give out an acrid matter that irritates the surrounding parts ; and the ulceration, if not checked, penetrates deeply, and destroys the soft parts, even as far as the bones.

Treatment.—Stimulating applications are found to be the most efficacious in curing chilblains. One of the best liniments in general use is composed of an ounce of *camphorated spirit of wine*, mixed with half an ounce of *Goulard's extract*.

Mild applications of electricity have cured a number of cases.

The following is earnestly recommended :

Sulphurous acid, 3 ounces (96 grams),
Glycerine, 1 ounce (32 grams),
Water, 1 ounce (32 grams).

Mix, and apply with a camel's-hair brush when there is itching and burning.

The proper treatment for *broken or ulcerated chilblains* is, in the first instance, to apply warm poultices of bread and milk or linseed-meal, which are to be discontinued after two or three days, and the tincture of iodine applied. The ulcers, and all the discolored skin surrounding them, are to be moistened with it once a day, and then dressed with basilicon ointment spread on lint or on a piece of soft linen rag. Lunar caustic, in the proportion of from five to ten grains (30 to 60 grams) to the ounce (32 grams) of water, and a drachm of red precipitate mixed with an ounce of basilicon, are useful dressings for broken chilblains. When the sores assume a healthy appearance and begin to heal, these stimulating applications must either be made very much weaker or discontinued altogether, and basilicon or any simple dressing substituted for them.

The following is excellent for such cases :

Salicylic acid, 4 grains (.25 grams),
Glycerine, 3 ounces (96 grams).

Mix, and apply with a soft brush, and then cover with cotton.

Persons whose feet and hands become chilled and benumbed from exposure to a moderate degree of cold, should avoid sudden vicissitudes of heat and cold as much as possible ; they should take regular exercise in the open air, having the extremities of the body well protected by warm clothing ; and if those parts should become chilled from exposure to cold, care ought to be taken to restore the heat gradually by friction, by means of warm water or otherwise, and not to expose them to the fire or to sudden heat. Those who are subject to chilblains should take care, after washing the hands and feet, to dry them properly, and not leave them in the slightest degree moist ; and during the winter months they should avoid washing the hands in cold water. Bathing the feet and hands every night in warm water, with some common salt dissolved in it, is one of the best means of preventing chilblains.

When a person is frozen or frost-bitten he should be put in a cold room. The frozen part should be put in ice-cold water and carefully rubbed with snow or bits of ice. Care must be taken not to chafe or break the skin. The point is to gradually restore the circulation. This can usually be done in half an hour or an hour.

CHILD-BED FEVER. (See Puerperal Fever.)

CHILLS AND FEVER. (See Ague.)

CHLOROSIS. (See Green Sickness and Menstruation.)

CHOKING. (See Hanging and Suffocation, p. 440.)

CHOKE-DAMP. The poisonous gas sometimes found in wells and mines. (See Suffocation, p. 441.)

CHOLERA.

Cholera is generally divided into two species—*cholera morbus* and the *Asiatic cholera*. Cholera morbus occurs in every country and at all seasons of the year, though it is most common in warm climates, and when the heat is greater than usual.

Symptoms of Cholera Morbus.—It generally commences with griping pains in the belly and sickness at stomach ; and these symptoms are soon followed by frequent vomiting and purging. The food in the stomach is first discharged ; then a fluid, varying in color, but always containing bile, is thrown up in great abundance ; the evacuations from the bowels also contain bile, and are voided with considerable straining, heat, and pain at the lower bowel. There is at the same time a violent pain at the stomach ; and the belly, and in some cases the calves of the legs, are contracted by strong spasms, which recur at short intervals, accompanied with great pain. These distressing symptoms are attended with much anxiety, restlessness, and a sensation of burning heat at the stomach, with urgent thirst and severe headache ; and the pulse, which is at first full and rather quicker than natural, becomes feeble and rapid as the disease proceeds ; and the patient's strength diminishes. In ordinary cases these symptoms abate of their own accord, or are checked by the assistance of remedies in the course of a few hours, or they may continue during two or three days, and then cease gradually. But in the more severe cases the symptoms acquire a more alarming character. *The vomiting and purging become almost constant*, and the matter vomited is sometimes watery, frothy, or slimy, and only occasionally *mixed with bile* ; but that fluid in a highly acrid state forms always a part of the discharge from the bowels, and this *appears to be one of the most marked distinctions between the common and the Asiatic cholera, in which the stools do not contain bile*. The body and limbs are covered with *cold sweat* ; the muscles of the belly are frequently contracted, and drawn into knots by violent *spasms*, which also attack the legs, the thighs, and even the hands and arms. If the progress of the disease cannot be arrested, the face soon becomes deadly pale, shrunk, and expressive of the greatest pain. The eyes appear sunk in their orbits. The extremities of the body become cold, and the pulse weak and intermitting. Sometimes the patient recovers even after the disease has advanced to this extent ; but in general the strength diminishes rapidly ; frequent faintings, laborious breathing, and hiccough supervene ; and death is then inevitable. If from the unaided efforts of nature, or from the judicious use of medicine, the stage of *collapse or sinking*, which has just been described, be prevented, the symptoms, after a longer or shorter period, varying from six to forty-eight hours, usually abate suddenly, and not in the gradually decreasing manner in which recovery takes place from inflammatory diseases ; the skin assumes its natural warmth ; the pulse becomes more full and less frequent ;

the vomiting, purging, and cramps cease ; and the patient though, very weak, remains quiet, and free from pain. No disease reduces the strength so quickly as cholera, nor is there any other of so violent a character from which recovery is so rapid. Convalescence, however, when proceeding in the most favorable manner, is often abruptly terminated by the imprudence of the patient, who, finding himself completely rid of the disease, and his appetite again in full vigor, indulges in eating animal food, and in consequence all the symptoms are reproduced, and soon become less manageable than before ; or inflammation of the stomach and bowels comes on, which, supervening on cholera, generally runs on to a fatal termination in spite of the best conducted treatment.

Cholera morbus has always been observed to be most prevalent when the weather is hot during the day and cold and moist at night ; and the frequency of its occurrence as well as its severity appear to depend on the degree of heat and humidity of the atmosphere.

Cholera morbus is easily distinguished from other diseases by the sudden manner in which it commences, the quickness of its progress, and abrupt termination. The symptoms arising from swallowing acrid poisons, such as arsenic, vitriol, corrosive sublimate, etc., have in most cases a strong resemblance to those of cholera morbus ; but the burning sensation extending from the throat down the gullet to the stomach, before the commencement of vomiting ; the frequent occurrence of violent vomiting some hours before the bowels are acted on ; the dark, bloody appearance of the matter vomited ; and, in general, the absence of cramps, are signs which sufficiently indicate poisoning from irritating substances.

TREATMENT OF CHOLERA MORBUS.

1. A mustard-plaster or a warm fomentation of hops and vinegar over the pit of the stomach, hot bricks or bottles of hot water to the feet. Among the common household remedies may be mentioned black pepper one table-spoonful boiled in half a pint of milk in small and gradually increasing doses. A table-spoonful of good brandy in hot water and loaf sugar, will often afford relief.

2. The following prescription :

Tincture of capsicum,
Tincture of opium,
Spirits of camphor,
Tincture of ginger, equal parts.

DOSE.—From twenty to sixty drops in water every half hour until the pain is relieved.

Or this prescription :

Tincture of rhubarb,
Tincture of ginger,
Tincture of opium,
Peppermint-water, equal parts.

DOSE.—Same as the preceding.

This treatment alone will usually afford relief in two or three hours.

3. In the last stages inject into the rectum one ounce of starch and fifty drops of laudanum, and give brandy internally.

Cholera morbus and Asiatic cholera are continually liable to disturb us. It is well, therefore, to be provided against all the emergencies.

Of late years various modifications of so-called *cholera mixtures* have been used with success.

One form is this :

Syrup of ginger,
Laudanum,
Tincture of capsicum,
Tincture of rhubarb,
Spirits of camphor, equal parts.

DOSE.—From twenty to sixty drops in one or two table-spoonfuls of water every half hour until relief is afforded.

Another form :

Chloroform,
Tincture of rhubarb,
Spirits of camphor,
Laudanum, equal parts.

DOSE.—Same as the preceding.

The power of these mixtures to relieve the griping and vomiting of *cholera morbus* is very decided.

I have used them in many cases, and have never known them to fail.

ASIATIC CHOLERA.

History.—This disease is said to have commenced in 1817 at Jessore, a town situated near the mouth of the Ganges, about sixty miles from Calcutta. It soon extended throughout the entire province of Bengal and the neighboring territories, and in the course of the following year reached the utmost limits of the Indian peninsula. It devastated China, the Birman empire, and adjacent countries in 1820 ; and in the two following years extended to the numerous islands of the Indian Ocean, and also to Arabia, Persia, and the borders of the Mediterranean in Syria. In 1823 it ravaged many towns in the Russian dominions. In 1829 it crossed the Don and the Ural mountains, and appeared in Europe ; at Moscow in 1830, and at St. Petersburg in 1831, and then accompanied the Russian army into Poland. In the same year it pursued its frightful career in Egypt, Austria, Hungary, Bohemia, and Prussia, and in the month of October appeared at Sunderland. In 1832 it continued its destructive course to London and Paris. In 1833 it crossed the Atlantic, and raged in the United States of America, Canada, and in the island of Cuba, but did not extend to the other West Indian islands. It subsequently visited the south of France, Portugal, and Spain ; and broke out at Naples and Rome in 1837, in which year it disappeared entirely. More than half of all those who were attacked perished ; and it is supposed to have carried off at least fifty millions of people. It visited the United States in 1832, 1849, 1850, 1854, 1865, and 1866.

The nature of Asiatic cholera still remains a mystery. Nothing satisfactory has yet been found out with regard to the specific cause, nor has the part of the body in which the disease originated been ascertained ; and whether or not it is contagious is still a question at issue. There is no doubt, however, that people in easy circumstances of life, who have been well fed and clothed, and live regularly, are less liable to it than those who subsist on poor diet and are addicted to drinking spirits.

Symptoms of Asiatic Cholera.—This disease in the majority of cases commenced with slight giddiness, a feeling of languor and general debility, an uneasy sensation of fulness, heat, and sickness at stomach, flatulent noises in the bowels, and frequent purging, *which was the most prominent symptom of the premonitory stage.*

These symptoms lasted only a few hours in some cases, in others they continued during three or four days ; and when they ceased spontaneously or were checked by timely treatment, the disorder was termed by the French *cholerine*.

But it frequently happened that these warning symptoms were neglected or could not be arrested, and the disease ran its course ; and in many cases the patients without any previous notice were struck down suddenly and died in the course of a few hours. When it came on suddenly the patient was seized with uneasiness or pain at the stomach, quickly followed by *retching* and *vomiting*. The contents of the stomach were first thrown up, and then a thin fluid, characteristic of the disease, resembling *rice-water*, was discharged in great abundance both upwards and downwards. These symptoms were either accompanied or soon followed by a sense of *constriction*, *anxiety*, and *weight* upon the chest ; *great restlessness* ; *quick* and *laborious breathing*, and painful *spasms* beginning first at the fingers and toes, and then extending to the arms, legs, and muscles of the belly, and in many cases to the loins and lower part of the chest. There was a *burning sensation* at the stomach, and dryness of the throat, with great thirst, though the tongue remained cool and moist ; and the discharge of *urine* was entirely *suppressed*. The strength gave way rapidly ; the pulse became quick, weak, and at times scarcely perceptible ; and the voice was husky, peculiarly plaintive, or almost extinct. As the disease approached a fatal termination, the extremities became *cold* and *shrunk* ; the fingers and toes appeared corrugated, as if they had been long immersed in warm water ; the surface of the body was covered with cold sweat ; the eyes were sunk and surrounded with a livid circle ; the face, the hands and feet, and in many cases the whole body, acquired a blue or purple color, and the pulse could no longer be felt at the wrist. This is called the stage of *collapse*.

When the patient recovered, reaction took place, the heat gradually returned to the surface of the body, all the bad symptoms ceased, urine was again discharged, and bile made its appearance in evacuations from the bowels ; but instead of this favorable termination it often happened that reaction was followed by fever, which frequently proved fatal. After death, which generally took place in from six to twenty-four hours, the fingers, toes, and lower jaw were in some instances seen to move ; and even the head was observed to shake, and the legs to approach each other. This extraordinary phenomenon has never been known to follow death from any other disease.

Cause.—The cause of cholera has been a subject of much discussion. The view which is now considerably received is that of Pettenkofer. He holds that cholera spreads through the “*rice-water*” discharges. It either exists in them or is formed in them.

The contagion, therefore, comes from one patient to another through watercourses, above or under ground, and “possibly in the form of dry dust in the air.”

Therefore the stools of patients should be promptly disinfected by chloride of lime, Labarraque’s solution, dry earth, peat, sulphate of iron, etc. (See Disinfectants.) The house should be thoroughly fumigated and disinfected. The cellars should be whitewashed. Chloride of lime should be placed in pans or saucers in various parts of the house. Chloride of lime, dry earth, peat, etc., should be kept in the privies. All foul clothing should be washed, disinfected, or burned.

Besides all these *general* measures, which should be adopted by the city and town authorities and by the master of every household, every individual should see to it that his own health is preserved, by obedience to the acknowledged laws of health. (See Hygiene.)

Above all things never be frightened, for fear brings on a multitude of diseases. (See Action of Mind on Body.)

Every possible precaution for preventing as well as every probable means of curing the disease should be familiar to the public as well as to the medical profession. In many parts of the country professional aid cannot be obtained at all; in other parts a disastrous delay must necessarily occur. The disease is sudden in its attack, rapid in its progress, and, according to statistics, in one case out of two, fatal in its effects. It is therefore only common wisdom to guard against it by unusual care, and to arrest the first symptoms by a prompt resort to remedies. The following rules, if strictly observed, will greatly contribute to personal security and to check the epidemic :

1. Let immediate relief be sought in any disorder of the bowels, however slight; the invasion of cholera may thus readily and at once be prevented.

2. Let every impurity, animal or vegetable, be removed as soon as possible from human habitations.

3. Let all uncovered drains be frequently and carefully cleaned, and let the grounds around dwelling-houses be so drained as effectually to carry off the moisture that otherwise might be in excess.

4. Let all the rooms of the house be thoroughly ventilated every day when the weather is dry, and let dry scrubbing be substituted for wet.

5. Avoid exposure to damp and cold, and excessive fatigue.

6. Let the use of cold drinks and acid liquors, especially under fatigue, or when the body is heated, be avoided.

7. Avoid the use of cold acid fruits and indigestible vegetables.

8. Let excess in ardent or fermented liquors, and the use of impure water in cooking or drinking, be avoided.

9. Use a healthy and nourishing diet that will preserve the strength of the body, and enable it to resist as far as possible the attacks of deleterious agents.

10. Avoid wearing wet or insufficient clothing.

11. Wear a flannel shirt, or at least a woollen belt around the belly. This has been found serviceable in checking the tendency to bowel complaints so common during the prevalence of cholera.

12. Let personal cleanliness be scrupulously observed.

13. Avoid every cause tending to depress the moral energies.

14. Let the crowding of persons within houses or apartments, and sleeping in low, damp rooms, be avoided.

15. If the weather be moist or chilly, let small fires be kept up day and night, although out of season for them.

16. Finally, as every form and variety of indisposition during the prevalence of the epidemic has a tendency to merge itself in the prevailing disease, take immediate steps for relief, whatever may be the nature of the malady with which you are affected.

RECAPITULATION OF SYMPTOMS.

1. *Premonitory Diarrhea*.—This is painless and watery. It does not occur in all the cases, but in the majority. It may last an hour, or three or four days. Sometimes the patient dies in a few minutes, but such instances are rare.

2. *Rice-water Stage*.—The diarrhea increases and vomiting comes on. The discharges become of the color of rice-water, and are thrown out with great force. The skin gradually becomes cold. The patient grows feeble. There are *cramps* in the limbs.

3. *Collapse*.—The patient loses his voice, or has what is called the “*choleraic voice*.” His breathing becomes difficult; his thirst is great. The urine is suppressed; the pulse disappears; the skin becomes cold, sunken, and of a *blue* color.

After all this the patient may suddenly recover, though these symptoms usually prove fatal.

The disease may run its course in a few minutes, a few hours, a few days, or in two or three weeks.

Treatment.—All that we can do for cholera is very simple:

1. Treat the premonitory diarrhea by the cholera mixtures. (See Cholera Morbus.)

Let the patient *rest*. Apply mustard-plasters over the abdomen. Give hot foot-baths.

2. In the *rice-water* stage this prescription of Prof. Horner is recommended by Hartsborne :

Chloroform,
 Landanum,
 Spirits of camphor,
 Aromatic spirits of ammonia. Of each, $1\frac{1}{2}$ teaspoonfuls.
 Creosote, 3 drops,
 Oil of cinnamon, 8 drops,
 Spirits of Gallic wine, 2 teaspoonfuls.

DOSE.—Dissolve a teaspoonful of this in a wine-glassful of ice-water, and give of that two teaspoonfuls *every five minutes*, followed each time by a lump of ice.

The following *cholera pill* has been much used in India :

Powdered opium, 1 grain (6 centigrams),
 Pepper, 2 grains (12 centigrams),
 Assafetida, 3 grains (18 centigrams). Make one pill.

DOSE.—Take one several times a day, or until relief is found.

It is said that these pills have been distributed among the families of India by tens of thousands. They are distributed at the dispensaries and also by the police.

Give a little brandy at times, or other stimulants.

Rub the limbs with brandy or whiskey. Apply mustard-plaster to the pit of the stomach.

Persevere with all these remedies until the patient either dies or begins to recover.

The true way to cure cholera is to prevent it. The next best thing is to cure the premonitory diarrhea.

Under our present sanitary regulations, and with our present knowledge of the causes of the disease, we can prevent it much better than formerly.

It is not probable that in future the epidemics of cholera will be as terrible as they have been in the past. Although we cannot cure it *much better than formerly*, we have learned to prevent and control it by sanitary measures.

CHOLERA INFANTUM, OR SUMMER COMPLAINT.

This disease of the summer and early fall months is almost peculiar to the United States, consequently English and French writers give but a very partial and deficient description of this disease. It attacks almost exclusively children between the ages of four and twenty months.

Causes.—The causes are excessive heat. An unusually warm and *moist* season will especially favor the production of this disease ; impure air ; insufficient or improper food ; insufficient clothing ; and, lastly, the irritation of teething.

Symptoms.—The manner of seizure is not always the same. It may commence as a simple diarrhea, with but few symptoms of derangement of the stomach ; or violent vomiting and purging may suddenly occur. The discharges from the bowels are very variable. They may be thin and watery, but are often mucus and mush-like. The features are anxious and expressive of suffering, sometimes pinched and contracted from the first. The skin is drier than natural, and the extremities cooler. In severe cases they may be cold and blue. The abdomen is usually warmer than natural. The general feverish symptoms increase towards evening.

Preventive Treatment.—In a work like this, this division of the subject is of the first and highest importance. It is in the power of almost every mother to prevent this ferocious disease. If the child's constitution is originally faulty and feeble, no solicitude, however anxious—no care, however prudent and skilful—may suffice to ward off an attack, but it is the *preventive plan alone which affords a shadow of hope.*

The gums should be frequently examined, and freely lanced, when they give the first symptoms of irritation. But the most important measure, without which all others may prove ineffectual, is early removal to a healthy locality. *A child predisposed to bowel diseases, if resident of a city, should be sent into the country as early as June.* The selection of a proper place is of no slight importance. The land should be elevated, the air pure and dry. The vicinities of large fresh rivers, the head of tide-waters where salt and fresh water mingle, and marshy districts, should be avoided. The sleeping-room should be large and airy ; the bed a hair mattress or folded blanket ; cold bath or cold spongings should be used every morning. The child should be taken into the open air every pleasant day ; not for a few minutes only, but for hours. The dress should be loose and suitable to the temperature ; a flannel roller should be kept constantly applied to the abdomen. The

mother's milk is the child's best food, if the parent is healthy. It is her duty to attend carefully to her own diet, avoiding indigestible substances, crude and raw vegetables, etc.

Treatment.—This is a very severe and fatal disease, and requires great care in its management. If possible, skilled medical advice should always be obtained.

The general course of treatment is as follows :

1. Internally should be given a prescription containing aromatic syrup of rhubarb, bicarbonate of soda and prepared chalk, and a very little paregoric. The dose must, of course, be regulated by the age and constitution of the child.

The following prescription is much used in the Nursery and Child's Hospital of New York :

Creosote, 1 drop,
Lime-water, 2 ounces (64 grams).

One teaspoonful in a teaspoonful of milk to check vomiting.

2. If the stomach rejects food, place a little *chalk* on the tongue. A little of the *oxalate of cerium* will also check vomiting oftentimes.

Pepsin in doses of 3 or 5 grains (.18 or .30 grams) is also excellent for this purpose.

Subnitrate of bismuth may be used also, either alone or with the *pepsin*.

Bismuth Powders.

Subcarbonate of bismuth, 25 grains (1.50 grams),
Powdered ipecac, 2 grains (.12 grams),
Aromatic powder, 10 grains (.60 grams),
Powdered white sugar, 15 grains (.90 grams).

Make eight powders. Take one every three hours, in the milk of the mother or of the cow.

Recently, Dr. Caro has warmly recommended the *bromide of potassium* for cholera infantum.

The following prescription is good :

Krameria, 1 drachm (4 grams),
Bromide of potassium, 30 grains (2 grams),
Gum-arabic mucilage, 3 ounces (96 grams). Mix.

DOSE.—From fifteen drops to a teaspoonful, according to age and constitution of the patient.

I have used this bromide-of-potassium treatment and found it excellent. It seems to operate by calming the nervous system.

Sometimes, when the bowels are exceedingly loose and intracta-

ble, it may be necessary to inject *acetate of lead*, two grains (or .12 grams) to one ounce of starch (or 32 grams), into the bowels.

To quench the thirst, place *bites of ice* on the tongue.

4. *To sustain the strength*.—The food should be lime-water and milk, farina, arrowroot, beef-tea. A very little brandy may be given with the food.

Raw beef scraped fine has been used as food in such cases with success.

But after all that we can do the disease is a hard one. It may be necessary to try all the well-known astringents.

The great thing is a *change of air*. Keep the child away from the city during the hot months of summer. *Cure the disease by preventing it. Send your child to the mountains.*

CIRRHOSIS OF LIVER. (See Liver, Diseases of.)

CLIMATOLOGY. The scientific and practical study of climate in its relation to *health* and *disease*. (See Climate, p. 292 ; and Change of Residence, p. 295.)

CLUB-FOOT.

This is a deformity which is very familiar, and need not be described.

The *treatment* consists in cutting the tendons of the affected muscles with a "*tenotome*," and in wearing some form of club-foot apparatus.



Fig. *a* Varnus. Fig. *b* Equinus form of club-foot.

In the hands of a skilful surgeon great benefit results from persevering treatment. Parents make a great mistake when they suppose that their children will outgrow these or any other deformities ; they mistake also if they suppose that even in the hands of a skilful surgeon the cure can be rapidly accomplished. Time and patience co-operating with skill are needed.

COMMON COLD—COLD IN THE HEAD.—(*Coryza*.)

A cold in the head although a disorder of no great consequence in itself, yet when neglected the inflammation attending it frequently extends to the mucous membrane of the windpipe and air-passages of the lungs, and brings on severe cough (see Bronchitis); or it may even terminate in pleurisy or inflammation of the substance of the lungs.

To infants, severe cold in the head is very distressing; the nostrils being completely obstructed, the child, after nursing a few mouthfuls, is obliged to quit the breast, and returning to it again and again, becomes at length quite exhausted, and perhaps falls into convulsions. Catarrh is a common attendant of measles, and frequently accompanies scarlet fever and small-pox.

Treatment.—Nothing is easier than to cure a common cold, provided *we take it in time*. Few things are harder than to cure a common cold that has *been long neglected*.

The *first hour* after a cold is taken it may readily be cured by anything *that restores the warmth and equalizes the circulation*.

When you even suspect that you may have taken cold, stand for *fifteen minutes with your back against* a hot stove-pipe, or *sit with your back against the fire in the stove, fireplace, or furnace*. Our colds enter through the back of the neck and spine more than through the breast, as is commonly supposed. We must drive out our colds by the same door through which they enter. Wet feet are a very common cause of cold, therefore it is well to bathe them in hot water with mustard, at the same time drinking any thing that is hot. It is not of so much consequence what we drink as that we should drink it promptly, and in sufficient quantities to *open the pores of the skin that have been closed by the chill*. Alcoholic liquors, tea, coffee, herb teas of the various kinds, “composition” powders, and cold water, etc., all are good.

My own remedy for a common cold is my *cold powder* (see Cold Powder). I find it amply sufficient. If used in time, it almost always breaks the force of a cold, and sets it on the way towards recovery. It opens the pores of the skin in a gentle but most effective manner, promotes sleep, and, when not given in too large doses, leaves no unpleasant effects behind. It is a very simple remedy. It is not unpleasant to the taste. It requires no complicated apparatus, no profuse sweating, no forcing down of disagreeable drugs, no packing in flannel, and no scalding with hot water; and, more than all, does not make us *liable to take a new*

Plate C.



COLOCYNTH. *Citrullus Colocynthus*.



BARBERY. *Berberis vulgaris*.



JUNIPER. *Juniperus Vulgaris*.



TAMARIND. *Tamarindus indica*.



HORSE CHESTNUT — *Esculus Hippocastanum*.



ONION. *Allium Cepa*.

cold the next day. The following morning after we have taken it we are safe to rise at our usual time and go about our business. (For dose, etc., see Cold Powder.)

Next to the cold powder I rank the well-known Dover's powder. It is, however, more disagreeable—is, indeed, to many exceedingly nauseous—and is no more effective, and, when given in large doses, is more apt to leave disagreeable effects.

The truth is that almost any preparation of opium and of its salts taken early, taken often, and taken in very small doses, will cure a common cold. A drop or two drops of *laudanum* every hour is good. We should try at all times to be above the suspicion of having caught cold. If at any time, or in any place, or for any reason we suspect even that we have taken cold, if we begin to feel chilly and disagreeable, but are not sure whether we have taken any cold or not—then is the time to begin taking very minute doses of *opium*, or *laudanum*, or of the *cold powder* every hour or two.

Sometimes when I am travelling and suspect that I may have taken cold, I take an opium pill containing one grain, and nibble on it every hour or so during the day.

Cold Powder.—This is a name given to a powder that I have for some time been accustomed to use in *colds and catarrhs*. I regard it as a *specific* for a *common cold*, provided it is given in time. The formula for making it is as follows :

Camphor, 5 parts,
Powdered opium, 1 part,
Carbonate of ammonia, 4 parts.
Quinine, 6 parts.

Dissolve the camphor in ether to the thickness of cream, then add the opium, ammonia, and quinine. I regard this cold powder as much superior to the ordinary Dover's powder, for these reasons :

1. *It is more efficacious.* It more surely breaks up a cold.
2. *It is more agreeable to the taste.* The *ipecac* of the Dover's powder is exceedingly nauseous. In this preparation there is no *ipecac*, and the bitter taste of the opium is disguised by the *ether* and *ammonia*.

The preparation should be kept in a *bottle tightly corked* or in capsules. It should usually be given at night, before retiring, or in small doses at any time during the day.

DOSE.—From *three to ten grains* (.18 to .60 grams), or from $\frac{1}{8}$ to $\frac{1}{4}$ of a common thimbleful in a little water. It should be kept on hand at all times, and should be taken as soon as possible after we become chilled through, or even *suspect* that we have taken cold. The dose may be repeated the following night, or during the following day.

Since the publication of the first edition of this book, I have heard from all parts of the country of the beneficial effect of this cold powder. No one suggestion in the book has been more generally acted upon or more gratefully received. The only objections found to the remedy are that it sometimes produces nausea the next day, and keeps the patient awake at night. These effects appear when one is especially susceptible to opium. By the use of smaller doses these objections can be well met. The above prescription contains but one half as much opium as the one in the first edition, and in addition contains *quinine*.

The cold powder has been used with great advantage in *hay fever*.

Importance of early breaking up a cold.—The importance of doing this cannot be exaggerated. Neglected colds lead not only to serious disease of the lungs, but to many fatal inflammations of the bowels and of the special organs. Very many incurable or serious diseases of the spinal cord start in a common cold, which, by following the advice above given, may, in nearly all cases, be broken up.

Other and more recent suggestions for curing a cold are these two :

Muriated tincture of iron, in one-half teaspoonful doses, every three hours. This suggestion was made by Dr. Prout, of Brooklyn. He claims that it dries up the secretion in the nose in a few hours. My observation confirms his statements. It should be taken through a glass tube and diluted with water.

The following prescription acts well :

Subnitrate of bismuth, 4 drachms (16 grams),
Powdered gum-arabic, 1 drachm (4 grams),
Morphine, 2 grains (.12 grams).

This is to be snuffed up the nose occasionally.

COLIC.

Symptoms.—Common colic commences suddenly with griping pain, and a sense of twisting about the navel and lower part of the belly ; and sometimes the whole belly is affected. The pain is not constant, but comes on in paroxysms. The bowels are constipated. There may be slight nausea, and even vomiting. A frequent though not a constant symptom is a rumbling noise in the bowels, arising from wind, which sometimes accumulates and distends the belly until it feels quite tense. The disorder is then called *Flatulent Colic*. In other cases the belly is drawn inwards towards the spine, and the abdominal muscles are sometimes seized with strong spasms, and are drawn into hard knots, which feel like balls in the belly. There is no fever ; but, on the contrary, the skin is cool, the pulse generally weaker than natural, and the face bedewed with perspiration. When this affection continues longer than usual, the pulse becomes very feeble, the skin is covered with cold sweat, and the patient sometimes becomes so weak that he occasionally faints. Common colic is, however, almost invariably relieved in the course of a few hours.

This form of colic may proceed from sudden or long exposure to cold, wet feet, hardened or accumulated feces lodged in the bowels, eating food difficult of digestion, cold drink swallowed too quickly, violent mental emotions, metallic poisons, rupture, and various other causes. It is distinguished from inflammation of the bowels by the absence of fever, and by the pain being relieved on pressure, which always increases it when inflammation is present. It must, however, be remembered that colic occasionally terminates in inflammation ; there is then pain when the belly is pressed upon, heat of skin, thirst, and quick pulse.

Treatment.—The course of treatment in colic is—

1. *To empty the stomach*, if it should contain any irritating substances. This may be done by giving 15 or 20 grains (.9 or 1.2 grams) of ipecac, or a table-spoonful of mustard or common salt in a cupful of tepid water. Simply tickling the throat with the finger will cause many to vomit, and will much assist those in vomiting who have already taken an emetic.

2. *To relieve pain and spasms.*—In order to quiet the horrible griping pains and correct the spasms, place a mustard-plaster over the abdomen, or use hot fomentations on the abdomen with flannels wrung out in hot water. Give internally chloroform, one fourth or one half a teaspoonful, or opium (one-grain pills), or laudanum in the usual doses, until relief is obtained. Sometimes the patient can bear a large quantity of opiates in this affection.

The cholera mixture I have often used with success in colic. The prescription varies, but the ingredients are these :

Tincture of rhubarb,
Tincture of capsicum,
Tincture of ginger,
Tincture of opium, equal parts.

Dose.—From twenty to sixty drops (.67 to 2. grams) in water every half hour until the pain is relieved.

Exceedingly small doses of *colocynth* sometimes afford immediate relief in colic.

BILIOUS COLIC.

Bilious colic differs from ordinary colic chiefly in this, that it is accompanied by symptoms of liver disturbance, and by vomiting of bile and pain in the region of the liver, and sometimes by temporary yellowness of the skin.

Treatment.—Bilious colic, during the attack, is to be treated in the same way as the ordinary colic. In the intervals measures should be used to prevent the recurrence of the attacks. The patient often needs *tonics*—air, exercise, sunlight, bathing, quinine, strychnine, phosphorus, arsenic, electricity, etc.

Calomel, *podophyllin* and *nitro-muriatic acid* are to be given in the intervals, in order to correct the condition of the liver. For doses see list of medicine.

Bilious colic seems to run in families. When it is thus hereditary it is sometimes almost if not quite impossible to drive it from the system. Patients often outgrow it, or the disease takes some other form.

LEAD (OR PAINTER'S) COLIC.

This form of colic arises from the action of lead on the body, and occurs principally among house-painters, miners, plumbers, color-grinders, glaziers, gilders, those who are employed in melting lead, and among manufacturers of white-lead and other preparations of that metal. It is also caused by drinking wine, cider, spirits, beer, or water containing litharge, or the carbonate or acetate of lead in solution. Lead colic was first traced to its source about a hundred and fifty years ago, in Germany, where it was ascertained that a custom had long existed of sweetening wines with litharge ; and indeed this pernicious method of adulterating

wine is far from being extinct. It is well known, for example, that the sweet wines of Italy are frequently adulterated with sugar of lead.

Symptoms.—This disease seldom commences suddenly. During three or four days, or even longer, before the patient is prevented from attending to his work, he experiences a slight degree of numbness in his hands and feet, a dull, uneasy sensation in his bowels, loss of appetite, and sometimes slight purging during a day or two. At length sickness at stomach, headache, acute pain in the limbs, costiveness, and griping pain, with retraction of the belly, come on. These symptoms increase in violence as the disease advances; the bowels remain obstinately constipated; the pain in the belly and limbs becomes very severe, and extends to the back, loins, and hips; and, as in common colic, is not constant, but recurs in frequent paroxysms, which are accompanied in many cases with painful retraction of the testicles. The patient lies on his belly, or presses his hands against it; he tosses about in bed, and is exceedingly restless; and his suffering is so much increased in the night that he is almost if not entirely deprived of sleep. Vomiting of acrid mucus or bile is not an unusual symptom, particularly when the fits of pain reach their height; but there are no symptoms of fever. The pulse continues natural, unless in bad cases, when it ultimately becomes quick and weak. The countenance throughout the disease appears sallow and expressive of acute suffering. It does not often happen that the first attack of painter's colic is either accompanied or followed by palsy of the limbs; but in subsequent attacks the hands and arms, and sometimes the feet and legs, are paralyzed; *and the right arm is more frequently affected in this manner than the left.* This is called *wrist-drop*, and it helps in diagnosing the disease. The palsy affects the motion of the limbs only, and not the sense of feeling; and in many cases the paralyzed parts become greatly emaciated. But although this is both a tedious and a painful disease, yet it rarely proves fatal. It lasts generally from eight to ten days, but sometimes much longer, and is very apt to return, from re-exposure to its specific cause. The distinctions already noticed between common colic and inflammation of the bowels are also applicable to colic from lead.

Treatment.—*Iodide of potassium* is the remedy now given for colic which results from poisoning by lead. It combines with the lead, and forms *iodide of lead*, which is eliminated from the system. It may be given in doses of five or ten grains (.31 or .62 gram) in gum-arabic water.

Alum is used for the same purpose, but it is not so good as *iodide of potassium*.

Opium may be given to relieve the pain. In lead colic, opium seems to loosen the bowels.

Electricity is a most excellent remedy for poisoning by lead, and for the paralysis that is caused by it. It is of course best adapted for the chronic condition. (See Electricity and Electrotherapeutics.)

COLIC IN INFANTS.

Infantile colic sometimes comes on in consequence of the retention of the dark matter called *meconium*, which collects in the bowels during a month or two previous to the birth of the infant. It also arises from too early feeding, improper food, and from the state of the mother's or nurse's milk, which may be deranged in consequence of bad health and improper manner of living, or from certain moral causes.

Symptoms.—An infant affected with colic is very restless, screams frequently, and appears in great distress. The lower extremities are drawn up upon the belly; the bowels are constipated, there is generally vomiting, and the belly is either more or less distended.

Treatment.—Although colic is sometimes caused by *meconium* being retained and becoming acrid and irritating to the bowels, yet this seldom happens when the mother is able to suckle the infant; but when a nurse is employed for that purpose, it is by no means an uncommon occurrence. This is owing to the quality of the milk, which, when first secreted, is sufficiently laxative to carry off the *meconium*. It is, however, very improper to interfere with the bowels, unless we are certain that it is really necessary to do so; and yet there is nothing more common than to find nurses forcing castor-oil down the throats of infants within half an hour or an hour after they are born; indeed, this is frequently the first thing they are allowed to taste. The consequence is, that griping and purging are very often brought on; then a little paregoric elixir is given to soothe the bowels. This of course produces costiveness, to relieve which the nurse deems another dose of castor-oil, or perhaps a little calomel, necessary; and thus the poor infants are tormented in consequence of the absurd meddling of nurses, many of whom think that they are not doing their duty unless they are frequently employed in dosing infants with medicine and feeding them with thick gruel, arrow-root, and other substances which

at that early age their stomachs cannot possibly digest ; flatulency necessarily follows ; then come the symptoms already mentioned, indicative of colic. The treatment to be adopted in such cases is very simple. The following injection is to be given as soon as possible :

Warm water, 1 wine-glassful,
Peppermint-water, 2 teaspoonfuls,
Castor-oil, 1 teaspoonful,
Tincture of assafetida, from 10 to 20 drops. Mix.

This injection usually gives immediate relief ; but if it fail in doing so, a small teaspoonful of *Holland gin* with a little sugar and warm water, or from eight to twelve drops of the *tincture of assafetida*, or the same quantity of *sweet spirits of nitre*, in a small quantity of water, should be given. The warm bath, and rubbing the belly with the following liniment, are to be resorted to if necessary :

Camphor, 1 drachm (4 grams), to be dissolved in
Olive-oil, 1½ ounces (48 grams),
Laudanum, 1 drachm (4 grams). Mix.

This treatment rarely fails in relieving the little patient, who soon falls fast asleep. The following powder may be given some hours afterwards in sugar and water, or the bowels may be opened by means of a little manna dissolved in warm milk :

Calcined magnesia, 6 or 8 grains (.36 or .50 gram),
Rhubarb, 2 grains (.12 gram),
Anise-seed, in powder, 2 grains (.12 gram). Mix.

(See Children, Diseases of.)

CONCEPTION. (See Pregnancy, Diseases of.)

CONFINEMENT. (See Pregnancy, Diseases of.)

CONGESTION OF LIVER. (See Liver, Diseases of.)

CONGESTION OF LUNGS. (See Lungs, Diseases of.)

CONGESTIVE CHILLS. (See Ague.)

CONGESTIVE FEVER. (See Intermittent Fever.)

CONSTIPATION—COSTIVENESS.

Constipation is a disease that every one in this country is familiar with. Very many errors are abroad in regard to it. It is supposed to be the result of mechanical obstruction of the bowels, and that therefore it should be treated by purgatives entirely, and by eating coarse food.

Symptoms.—The truth is this: constipation is a symptom of very many and diverse morbid conditions of the body. In our times it is usually one of the symptoms of *nervous derangement*. It is a symptom of nervous dyspepsia. *When the food is properly digested in the stomach and intestines, and when the nervous system is in a proper condition, the bowels will usually be regular, whatever our diet may be.*

Constipation is exceedingly frequent. There is scarcely a family in the land that is not annoyed by it. This bad condition is brought on by these, among other causes:

1. Over-work and over-worry of the brain and nervous system.
2. Hereditary descent.
3. Bad diet—too much pork and sausages; too little fruit and fresh beef.

4. Neglect of the bowels. Every one should go to the water-closet at a regular time, once a day at least, whether they feel disposed to do so or not. This is an imperative duty.

The best time of the day for most persons is shortly after breakfast. Those troubled with bleeding piles do best to go to stool in the evening before retiring.

5. Neglect of physical exercise.

Farmers' wives and daughters are often sufferers from constipation, because they eat the same food—pork, ham, sausages, cabbages, etc.—as those laboring actively on the farm, and yet remain all the time indoors.

Any cause that injures the system at large may produce constipation of the bowels.

Treatment.—1. *Treat the cause of the constipation.*—Cure the nervous dyspepsia. Strengthen the constitution by the rules already given. Treat the *dyspepsia* as directed under that disease. (See Dyspepsia.) If nervous exhaustion is the cause, treat that by all forms of external and internal tonics—air, sunlight, exercise, water, strychnine, phosphorus, quinine, iron.

If disease of the liver is the cause, treat that by the principles laid down under that head.

2. *Stop the evil habits that bring on constipation.*—Rest the

brain. If possible, cease to worry. Take plenty of sleep. Take a change of air. Take occasional and short vacations, for one or two days at a time. Avoid tight lacing. Use less tobacco, less brandy, less tea, and less coffee, provided you have been accustomed to use any of these substances in large quantities.

3. *Regulate the diet.*—Study the rules given under Dyspepsia. Have a *variety* of food—*fresh meat, vegetables, bread, fruit, and oatmeal*. Undoubtedly it is a disadvantage in many respects to live so exclusively, as we do, on fine white bread. A reasonable amount of graham bread and Indian bread is to be recommended. Remember these golden rules :

1. Food which is best enjoyed is best digested.
2. Food which is best digested is best for the bowels.

Do not attempt to live on bran-bread and fruit exclusively.

If you like Graham bread and fruit, eat them in conjunction with fresh meats, fish, and other palatable varieties of food.

It is a great error to suppose that constipation is to be cured by mechanically forcing down the feces by bran-bread, johnny-cakes, and fruit. For weak stomachs—and constipated patients often have weak stomachs—Graham bread, fruit, and Indian bread are usually more difficult of digestion than common white bread and biscuit, and therefore should be avoided.

Salt pork, sausages, ham, heavy bread of any kind, soggy pies, and cakes produce constipation by first inducing dyspepsia. As a rule, avoid eating very late at night, unless you are exceedingly hungry just before retiring.

It is hard for an invalid to sleep on a very empty stomach. The *best* kinds of food to eat just before retiring are oysters—raw or stewed—crackers, white bread and butter, and ripe mellow fruit; the worst kinds are soggy pies and cakes, nuts, candies, raisins, hard apples, and vegetables.

4. *Cultivate the habit of visiting the water-closet regularly each day at a certain hour.*—It is sometimes difficult to do this, especially when visiting among strangers and travelling, but yet it is a duty that we should never neglect. The habit will soon become a second nature. The best time in the day for visiting the water-closet is just after breakfast, or at least before entering on the active duties of the day.

Persons vary in their habits in this respect. Some maintain their health with two passages daily, others appear to be equally well with one passage every other day.

5. *Exercise the bowels in a variety of ways.*—Riding on horseback, climbing hills and mountains, the Swedish movements,

walking, playing active games, gymnastics, all forms of muscular exercise, and especially those which employ the muscles of the trunk, are to be recommended. We should select those methods of exercise which we love best, and as soon as we get tired of one method try another.

Kneading the bowels with the hands—the so-called Halstead method—is sometimes of decided service. This method, like “*rubbing*,” “*lifting*,” etc., is simply a modification of the movement cure. (See Movement Cure or Massage.)

6. *Use of medicines*.—Cathartics are terribly abused. Many patients purge all their strength away. It is quite rarely that patients should take large doses of cathartics for constipation.

If the preceding measures that I have recommended are not successful, it is best to obtain good medical advice. As I have said, it is well to take powerful cathartics only very rarely, if at all. If medicine is to be taken to act directly on the bowels, some gentle laxative is preferable.

The following prescription contains four excellent articles for both indigestion and constipation :

Podophyllin,
Rhubarb,
Nux vomica,
Carbonate of soda—equal parts.

Make pills of *one grain* (.06 gram) *each*, and take one at night before retiring. It may be necessary to reduce the quantity of *podophyllin* for those who are very sensitive to this drug.

The podophyllin acts on the liver ; the rhubarb acts on the bowels ; the nux vomica gives tone to the stomach ; and the carbonate of soda corrects the acidity.

A good pill is the following :

Extract of hyoscyamus, 1 grain (.06 gram),
Extract of belladonna, $\frac{1}{10}$ grain (.006 gram),
Podophyllin, $\frac{1}{4}$ grain (.015 gram),
Extract of gentian, sufficient quantity.

This makes one pill.

Another excellent formula is the pill *salutis*, or safety pill :

Extract of aloes, $\frac{1}{2}$ drachm (2 grams),
Extract of nux vomica, 6 grains (.36 gram),
Extract of hyosciamus, 20 grain, (1.25 grams),
Powdered ipecac, 1 grain (.06 gram).

Make twenty pills. Take one at night. For habitual constipation this pill is excellent.

But, after all, it is better that the bowels should be somewhat constipated than that they should be continually irritated by drugs.

Injections of cold water into the bowels in the morning have a tonic effect on the mucous membrane of the rectum, and help to bring away the fecal matter. I think that they may be used without injury for months. But they do not cure the indigestion; they do not remove the *cause* of the constipation.

Hard cider is a good remedy for constipation. It does not agree with all patients. It is apt to cause headache. It may be taken at bedtime or on rising.

Seidlitz powders and the mineral waters are sometimes permanently useful for constipated patients. It is unfortunate, however, to be compelled to use any such substance habitually.

It is a good plan to drink freely of ordinary water before breakfast. The bowels need more liquid.

General and local faradization is the remedy that I have found more useful in constipation than any other form of treatment. It should be used skilfully, cautiously, and perseveringly (see Electricity and Electro-therapeutics). Its results in constipation are often immediate, and frequently permanent. It calms the nervous system, improves sleep, sharpens the appetite, and strengthens the digestion, thus relieving the morbid condition of which constipation is a symptom.

Besides all this, general electrization acts mechanically on the bowels, in the same manner as horseback-riding and the Swedish movements.

It may be said that it is too much work to go through all these processes and labors; that it is much easier to gain temporary relief by taking blue pills, calomel, rhubarb and senna, indefinitely, if necessary. I would remind those who feel thus that indigestion and constipation produce piles, headache, diseases of the genital organs in male and female, nervous exhaustion, and oftentimes seem to lead to diseases of the brain and spinal cord. Is it not worth while to prevent these serious conditions? Will it not be sufficient reward to save ourselves the pain, the distress, the depression, the exhaustion that are sure to result from chronic indigestion and constipation unless they are relieved?

There are cases of constipation which are of a marked hereditary character, and which will not permanently yield to any method of treatment. Patients who are thus afflicted can, how-

ever, save themselves many sorrows by obeying the great laws of health, and by giving special attention to the management of their digestive organs, according to the principles I have indicated.

(For more extended remarks on constipation, see Dyspepsia and Nervous Diseases.)

CONSUMPTION. (See Pulmonary Diseases.)

CONTUSIONS. (See Bruises and Abrasions of the Skin.)

CONVULSIONS—FITS.

The symptoms of convulsions or fits, especially in children, are very familiar.

Before the fit comes on the child is often fretful, restless, and perhaps grinds its teeth in its sleep.

The special symptoms of the attack are :

1. Twitching of the muscles of the face.
2. The body becomes rigid, and then is thrown into jerks.
3. The limbs are rapidly flexed and extended.
4. The head and neck are thrown backward.
5. The eyes roll, and have an unnatural appearance.

Sometimes a number of attacks rapidly succeed each other.

Causes.—Convulsions in children may be caused by worms, by constipation, by teething, by fear, by indigestion, by disease of the brain, by sudden drying up of eruptions on the head, and by very many of the acute and chronic diseases of childhood.

Treatment.—1. Ascertain the cause of the convulsions, and treat that. If the gums are swollen, lance them. If the bowels are constipated, open them by an injection of *warm water, soap, and molasses*.

2. Apply cloths wet in cold water to the head, and especially to *the back of the neck*.

Nearly all forms of convulsions in children and in adults may be cut short sooner by applying cloths wet in cold water, or, better still, *ice to the back of the neck*, than by making the same applications to the top and front of the head, because the back part of the brain and upper portion of the spine are frequently congested during the attacks.

Chapman's ice-bags are very useful in such cases. (See Ice-bags.) As a substitute for the rubber ice-bags we may wrap the ice in a piece of oiled silk, or even a common towel. The ice or wet cloths should not be kept too long on the child, else they may work injury.

3. *Put the child in a warm bath* if the cold applications fail.

4. Apply mustard-plasters to the stomach and legs ; cup the back of the neck in desperate cases.

During the intervals of attacks, use all means to improve the general condition of the child.

Besides infantile convulsions, there are convulsions of *epilepsy*, of *hysteria*, of *childbirth*, and of *St. Vitus's dance*.

It should be remembered that convulsions may be evidences of serious disease of the brain, for which, of course, medical advice should be obtained if possible. (See Infants, Management of.)

To prevent convulsions give *oxide of zinc* in doses of one quarter or one half grain (.015 or .03 gram) twice a day, or

Bromide of potassium, in doses of from five to ten grains (.31 to .62 gram), in water, three times a day.

Steiner, of Prague, uses the following :

Oxide of zinc, 4 grains (.25 grams),
Calomel, 2 grains (.12 grams),
White sugar, one drachm (4 grams).

Make eight powders. Take one every hour.

CORN8.

This term is given to the circumscribed, horny-looking excrescences of the toes and feet, which are caused by wearing improperly made boots or shoes. Corns are for the most part situated on the outside of the little toes, on the soles of the feet, and between the toes ; and in some individuals all the prominent parts of the toes to which undue pressure has been long applied are invaded by them.

Treatment.—The first thing to be done is to remove the cause of corns, by wearing boots and shoes neither too large nor too small, and constructed as nearly as possible to the shape of the foot, so as to obviate unequal pressure. If shoes be worn, they should come sufficiently high on the instep to prevent undue pressure on the toes, and the material of which they are made ought to be soft and pliable ; without these precautions other means will be of no avail, at least as far as regards effecting a radical cure, whereas by attention to them alone, corns frequently disappear entirely, or at all events their progress is arrested.

There are several ways by which corns may be eradicated, provided, as we have just mentioned, that properly constructed boots and shoes are worn. The following are the best methods with which we are acquainted :

The *first method* consists in removing the pressure from the corn, by applying over the toe on which it is situated a piece of doeskin spread with adhesive plaster, with a hole cut in the centre large enough for the corn to rest in ; the pressure of the shoe is thus removed from it and thrown on the surrounding parts. If this be kept constantly applied, and the prominent part of the corn cut occasionally with a sharp knife or razor, it will gradually disappear.

The *second method* is that of removing the corn entirely without breaking it ; this, however, can only be practised by an expert person accustomed to the operation, who, with an instrument for the purpose, scrapes round the circumference of the corn, carefully and gradually detaching it, until at length he reaches the extreme point of the root, and in this manner it is completely extracted, without giving the least pain. The cavity is then filled with a little simple ointment, and the part covered with adhesive plaster.

The *third method*, which is very frequently practised, consists in destroying the corn by means of *lunar caustic*. The hard part of the corn is first to be cut away as much as possible without causing pain or making it bleed ; the foot is then to be kept in warm water during a quarter of an hour or twenty minutes, and after drying it properly the lunar caustic is to be applied over the surface of the corn without using it too freely. The part is then to be covered with adhesive plaster, and at the expiration of ten days or a fortnight the dead scarf-skin generally comes away with the corn attached to it ; if not, the caustic is to be reapplied. A few hours' rest are necessary after the caustic has been employed ; hence the most convenient time to apply it is immediately before going to bed.

Sir Benjamin Brodie is of opinion that concentrated *nitric acid* or strong *aquafortis* is the best thing for destroying the soft corns which are usually seated between the toes. It is to be applied by means of a probe with a bit of lint attached to the end, and employed so as to penetrate into the substance of the corn without injuring the parts beneath.

The corns which form on the soles of the feet are exceedingly troublesome and not easily got rid of. Relief to a certain extent may be given by taking off the pressure from the corn and throwing it on the surrounding part, by means of the diachylon plaster employed in the manner recommended for bunions, or by wearing a felt sole in the shoe, with a hole in it corresponding to the corn.

Practically I find that the best treatment for corns is to

thoroughly cut them out as often as they appear, and cover them with adhesive plaster whenever they make trouble.

The best preventive is a soft, well-fitting shoe.

CORPULENCE—OBESITY—FATNESS.

Corpulence is rightly called a disease. In some cases it becomes exceedingly annoying, and may even shorten life.

Even as I am writing, the tidings come from Philadelphia that a lady has just died near that city from corpulence. For two months before her death she had been unable to move about. Her weight was enormous.

A Mr. Banting, of England, has written a little pamphlet, in which he gives his own experience in the reduction of fat. His principle was to abstain from sugar and starchy substances. The results were quite successful. It should be remarked that some persons cannot prevent the formation of fat by merely abstaining from food, or by drinking vinegar or other acids.

Banting had previously tried all the ordinary methods. Some others who have tried his method have thereby seriously injured themselves. *What does well for one may not for another.* (See Fat, How to Become.)

Recently the *bladder wrack* plant, or *fucus vesiculosus*, has been used with success for corpulence.

It may be used alone, or in combination with the *bromide* and *iodide of potassium*, as in the following prescription :

Fluid Extract of Bladderwrack, 4 ounces (128 grams),
Bromide of Potassium, 1 ounce (32 grams),
Iodide of Potassium, 3 drachms (12 grams),
Water, 3 ounces (96 grams),

DOSE.—One tea-spoonful. Suspend the medicine for a few days if bad symptoms appear.

COUGHS. (See Colds ; also Inflammation of the Lungs.)

CRAMPS.

Cramp is a sudden and involuntary contraction of a muscle. It often occurs in the lower limbs at night. It may be caused by indigestion or excessive fatigue. Some diseases of the spinal cord have cramp for one of the symptoms. Swimmers who remain long in cold water are sometimes attacked with cramp.

The treatment for cramp is *brisk rubbing*. In bad cases a liniment, or some alcohol, may be applied.

CRETINISM.

Imperfect development of the brain, with mental weakness. It is usually combined with goitre or bronchocele. (See Goitre.) It is observed especially in the valleys of Switzerland and on the Alps. The cause is not understood.

CROUP—TRUE OR MEMBRANOUS CROUP—FALSE CROUP.

The disease *true croup*, although it occurs occasionally in the full-grown person, may be considered to belong to children. It consists in a peculiar inflammation of the windpipe, which gives rise to the production of a whitish membrane, somewhat similar to the lining of an egg-shell. Upon this inflammation, upon the presence of the white membrane in the air-passages, and upon the spasmodic action which both are apt to produce, the symptoms of croup and its dangerous consequences mainly depend.

Croup occurs commonly in young children between the ages of two and six years. It is rarely met with in infants at the breast.

Symptoms of true croup.—Croup usually commences with all the appearance of common cough, and is not easily detected, even by the medical man, in its earliest stage. The child coughs, and has more or less fever, with hot and cold fits, flushed face, watery red eyes, and restlessness at night. The cough at this time is occasionally hard and hollow, and the child shows signs of uneasiness about the throat by frequently carrying the hand to this part, and complaining of pain. The voice may also be hoarse; and when these symptoms exist, no time should be lost in the application of appropriate remedies, for although they may be nothing more than common cough with irritation of the throat, yet they may be the first signs of an attack of croup, and it is infinitely better to have expended a little care, anxiety, and medicine for nothing, than to allow a disease of the most fatal kind to gain ground and establish itself, from the want of proper attention. The symptoms just enumerated may continue for a few days or weeks without much change; but sooner or later the character of the cough suddenly alters, and assumes what is called the croupy sound. This change usually takes place in the night, and is so peculiar that when a person has once heard the croupy cough he

can never mistake it again. It is a sharp, dry, ringing cough, which is followed by a hissing inspiration, and is compared to the crowing of a cock or the barking of a young puppy. The fits of coughing are most frequent during the night, and soon produce a most unfavorable effect on the state of the little patient; the face is flushed, and often bathed in perspiration; the eyes watery; the skin burning hot; the pulse frequent and hard; the voice is hoarse; and the upper part of the windpipe is often tender to the touch. This is the first dangerous change in the character of the complaint, and when it has once taken place, the symptoms commonly proceed from bad to worse. During the early stage the fits of coughing are not very frequent, and during their intervals the child may obtain a little rest; but they soon return with renewed severity. The croupy sound, hissing breathing, and suffocation are now more evidently marked (*confirmed stage*); the face is bloated; the pulse extremely quick, and the skin hot; each fit of coughing seems to threaten death by suffocating the child; and when the fit has passed over he lies in a state of extreme anxiety and restlessness, with the head thrown back and all the muscles of respiration in full action, showing that nature is making violent but vain efforts to convey air in sufficient quantities to the interior of the chest. The fits of coughing are now sometimes followed by vomiting, and very often by the discharge from the windpipe of viscid phlegm or shreds of the white membrane which is formed inside; in some cases regular moulds of the air-passages, resembling pieces of macaroni, are spit up. This gives temporary relief, but the fits of suffocative coughing soon return, and reduce the patient to an extreme degree of weakness (*collapsed stage*). The difficulty of breathing is now permanent, and the little sufferer does not seem to obtain a moment's relief, but lies gasping for breath, with a sunken countenance and cold skin. The pulse is now very quick, small and weak; the face bathed in a cold sweat and pale, with lividity of the lips; the cough is less frequent, and is evidently failing with the strength of the child; the voice is almost inaudible; the patient becomes restless, often makes convulsive efforts as if to free his throat from some obstruction, and either perishes in convulsions, or falls into a state of lethargy, which gradually settles down into death.

There are two kinds of croup—true and false. True croup comes on gradually, and is less likely to excite alarm than false croup, which comes on suddenly. True croup is attended with fever and false membrane in the throat; false croup is not attended with fever or false membrane in the throat. True croup is

almost always fatal in the course of four or five days ; false croup always recovers, but is liable to come on again. (See False Croup.)

MEMBRANOUS CROUP.

Treatment.—If no physician can be obtained, begin the treatment early, for although almost all cases of true croup die, yet there is every possibility of a mistake, and what we suppose to be true croup may be only an attack of false croup. Even if the case prove to be one of true croup, ultimately it will be a consolation to have tried to save the life of the patient, and to have somewhat relieved his sufferings.

1. Give ipecac in doses just large enough to cause mild vomiting.

2. Place a warm poultice around the neck. During all the treatment sustain the patient by beef-tea and stimulants cautiously used.

3. Fill the room with the vapor of boiling water. A large kettle filled with boiling water may be kept on the stove until the room is filled with hot steam. The room should be kept at a very warm temperature.

In desperate cases physicians sometimes open the larynx.

It is proper to remark here that true croup is not so common an affection as is commonly supposed. *The great majority of cases of so-called croup are simply cases of spasm of the glottis, or false croup.* “Croupy children” are those who are liable to these attacks of *false croup*. These attacks cause unnecessary alarm, although they are annoying of themselves and require treatment.

FALSE CROUP—SPASM OF THE GLOTTIS.

This is a spasmodic closing of the glottis, with shrill breathing.

It comes on quickly, and lasts but a little time. It is most frequent *during the period of teething.*

It sometimes greatly alarms the parents of the child, who fear that the symptoms betoken real croup.

Treatment.—1. Slap or strike the back and limbs.

2. Apply cold to the head.

3. Put the feet in hot mustard-water. This treatment is almost always successful.

Yellow sulphate of mercury is used with great success by Dr. Fordyce Barker. Give three grains (18 centigrams) at a dose. If

it does not act so as to produce vomiting in fifteen minutes, repeat it.

Wine of ipecac or syrup of ipecac in quantities sufficient to excite nausea and vomiting, is a good and safe remedy.

Some children are subject to these attacks very frequently. During the intervals they should be treated by tonics, such as iron, phosphorus, strychnine, sunlight, etc.

This subject of false croup is so important that I quote in full from Tobold :

“During an attack we place the child in an upright position, sprinkle water in the face, admit pure fresh air, strike with the hand on the back, rub the extremities with flannel, or put blisters on the breast and calves of the legs, and apply quieting lavements, especially with infused chamomile or valerian.

“Sometimes the excitation of choking, through irritation of the soft palate and pharynx by means of the finger, relieves the spasm. Inhalations of ether or chloroform are also highly spoken of by many authors. But they must be used on children with great caution.

“In regard to the prophylaxis (prevention), which is not less important than the therapeutics, we have first of all to prevent the recurrence of the attacks by improving the diet and avoiding all injurious causes. All physical excitation, terror, anger, sudden waking out of sleep, irritation of the air-passages through faulty swallowing in drinking hastily, also punishment that tends to frighten children, should be zealously avoided. The nursing child may be allowed to remain at the mother’s breast, unless other diseased states demand a change.

“If the child has been weaned shortly before the attack, restore it again to the mother’s breast, or provide a good wet-nurse. When this is not convenient, at least provide unadulterated milk from one and the same good cow, or ass’s milk, either pure or adulterated with one third water, according to the age of the child.

“In the next place, provide for good and healthy air, and for a residence in a sunny mountain region that is protected from the north-east winds, or on the sea-coast.

“Taking cold must be sedulously avoided by appropriate warm clothing. The diet of older children should be stimulating and nourishing, but as easily digestible as possible.

“Weakly, delicate children we treat by means of tonics, administering bark, or the syrup of the iodide of iron, from two to five grains, three times a day.

“In our special therapeutics, we have chiefly to direct our

attention to the existing basis of disease. Disordered digestion, intestinal catarrh, the irritation of worms, diarrhea, demand corresponding remedies." (See Infants, Management of.)

CUTANEOUS DISEASES. (See Skin, Diseases of.)

CUTS. (See Wounds, page 407.)

CYANOSIS, OR BLUE DISEASE.

A disease in which the complexion is tinged with venous blood from malformation of the heart. There is no special treatment for it.

CYSTITIS. (See Bladder, Inflammation of.)

DANDRUFF—(*Pityriasis*).

Dandruff is one of the most common and most annoying of the affections of the scalp, and there are few who are not at times more or less troubled by it. The fine whitish scales result from a peeling off and shedding of the outer cells of the scarf-skin, which up to a certain extent is a perfectly natural process. When, however, the scales are so numerous as to be seen falling from the hair whenever the comb or the fingers are passed through it, we have an abnormal condition, or a disease of the scalp. In some cases, where the sebaceous glands of the scalp are active, the scales are quite greasy, and instead of falling become matted together and form a thick whitish scurf upon the scalp.

Dandruff should not be neglected, as it is apt to be followed by a thinning of the hair, if not complete baldness.

The best way to treat this disease is to keep the scalp well washed and the hair well brushed, and to use mildly stimulating lotions.

Most people are too afraid of washing their own and their children's heads. The danger of taking cold, which is such a bugbear to many, is chiefly imaginary, and indeed there is more danger on this score to those whose heads are not washed. There are many who zealously wash every other part of the body, who perhaps take daily baths, and yet never wash their heads. Is it a wonder that the skin becomes inactive and the hair falls? It should be remarked here that those who are afflicted with chronic inflammation of the middle ear should be cautious about bathing their heads

or letting the shower-bath fall directly on it. The ears of children, too, should be well dried with cotton or bibulous paper after taking a bath.

The scalp can be easily cleansed, as a rule, by using a solution of borax or ammonia. As alkaline lotions remove the natural oil from the hair, they should be moderately used and combined with ten per cent of glycerine. The yolk of an egg is an excellent remedy for cleansing and soothing an inflamed and tender scalp. As a remedy for dandruff, a 5 per cent solution of hydrate of chloral may be used until there seems to be no disposition to a return of the scales, or the following preparation :

Aromatic spirit of ammonia, 2 parts,
Glycerine, 1 part,
Rosemary water, 17 parts.

DEAFNESS. (See Ear, Diseases of.)

DEBILITY, GENERAL. (See Neurasthenia, Nervous Exhaustion.)

DENGUE, OR BREAKBONE FEVER. (See Ague.)

DELIRIUM TREMENS—ACUTE ALCOHOLISM— DRUNKENNESS.

This disorder arises from excess in drinking spirituous liquors, or from the abuse of opium ; rarely from other causes. It comes on generally after a debauch, or in drunkards, in consequence of giving up their accustomed stimulus too suddenly.

Symptoms.—In some cases delirium is the first symptom observed ; but in general there are certain premonitory signs, indicative of its approach. The patient is restless, peevish, and cannot sleep well ; his manner becomes hurried and abrupt, and he appears low-spirited. After remaining some time, perhaps two or three days or a week, in this state, his ideas become confused, he bustles about as if he had more business to do than he could manage, he is exceedingly restless, and there is an appearance of wildness in his countenance. The characteristic symptoms of the disease then begin to declare themselves ; the hands, and sometimes the whole body, are in a constant state of tremor ; the tongue is also tremulous, and there is a twitching motion of the tendons at the wrist. If the patient sleep, it is only for a short time ; he awakes suddenly, alarmed by some frightful dream. At length the

mind becomes affected ; he fancies that there is some mischief plotting against him, or that his affairs are going wrong, and is constantly talking about them. When the delirium is fully established he cannot sleep, and attempts frequently to get out of bed. If he escape from his apartment there is no difficulty in leading him back to bed, if he be spoken to quietly ; but if thwarted he becomes exceedingly suspicious, accuses those near him of having some mischievous design against him, and struggles to get away. The hallucinations attending this disease are always of a desponding character ; the patient fancies that he is attacked by robbers, and struggles as if he were defending himself ; or he supposes that a swarm of bees are hovering around him, and he moves his arms as if he were driving them away.

It is of the utmost importance that delirium tremens should not be mistaken for inflammation of the brain, inasmuch as the treatment required for the latter would produce the worst effects in the former disease, which is to be distinguished from other affections of the brain by the absence of pain, the trembling of the hands and tongue, the starting of the tendons at the wrists, the peculiar character of the delirium, and the knowledge of the previous habits of the patient. On the other hand, a patient with inflammation of the brain has a strong, full pulse, hot skin, flushed face, red eyes, dry and red tongue ; he suffers from a distressing intolerance of light and sound ; and the delirium is generally furious.

The length of time required by delirium tremens to run its course is very uncertain, but it generally terminates within a week, and is not a dangerous disease when judiciously treated. (See Stimulants and Narcotics and Chronic Alcoholism.)

Treatment.—Give the following :

Bromide of potassium, 1 ounce (32 grams),
Hydrate of chloral, 1 drachm (4 grams),
Syrup of orange-peel, 3 ounces (96 grams),
Water, 2 ounces (64 grams),
Honey, 1 ounce (32 grams). Mix.

DOSE.—One table-spoonful in one half tumbler of water, every three hours or until quiet is produced.

Or this :

Bromide of camphor in doses of four grains (24 centigrams) every three hours, to produce sleep.

For the obstinate *retching* and *vomiting* give

Fowler's Solution of arsenic in one drop doses every hour, alone or with a drop of *capsicum*.

Or the following :

Tincture of nux vomica, 1 drachm (4 grams),
Tincture of capsicum, 1 drachm (4 grams),
Wine of pepsin, 1 ounce (32 grams).

DOSE.—Ten drops every two hours until the irritability of the stomach is relieved. In addition a bladder of ice may be placed at the pit of the stomach, or a mustard-plaster or a small blister applied.

Give nourishing and easily digested food, as yolks of eggs, soup, beef-tea, in small quantities and freely.

During the attack the patient should be kept where he can do no harm. The bromide of potassium may be given during the intervals of the attacks, in doses of 20 or 30 grains (1.25 or 2 grams), or the *oxide of zinc* in doses of one or two grains (6 or 12 centigrams).

DEMENTIA. (See Insanity.)

DENTITION. (See Infants, Management of.)

DERBYSHIRE NECK. (See Goitre.)

DIABETES—MELLITUS—SUGAR IN THE URINE.

There are two kinds of diabetes : with sugar in the urine, *diabetes mellitus* ; and without sugar in the urine, *diabetes insipidus*. The former is a serious, usually fatal disease. The latter is not so serious. Cases of it entirely recover. Both forms are characterized by profuse flow of urine.

Symptoms of Diabetes Mellitus.—This disease usually commences slowly, and the general health often suffers materially before the nature of the disorder is discovered. The first symptoms experienced are indigestion, general debility, constipation of the bowels, thirst, and irregular, capricious, and sometimes voracious appetite. At length the patient accidentally notices that his urine is considerably augmented in quantity, and, from the time that this observation has been made, he finds that the quantity discharged gradually increases. As the disease proceeds, the symptoms already mentioned become more severe ; the skin feels harsh and dry ; there is a sensation of heat and weight at the stomach ; alternate chills and flushes of heat are experienced, and the patient is very

low-spirited. All the symptoms go on steadily increasing in severity ; the urgent thirst and frequent desire to empty the bladder become very distressing, particularly during the night ; there is a dull, aching sensation across the loins, slight giddiness, and occasional headache ; cough and shortness of breathing, and entire loss of sexual desire. As the disease advances towards a fatal termination, the gums become red, swollen, and bleed from the slightest pressure ; the taste is depraved ; the tongue is foul, with red edges ; the strength is much diminished, and the body emaciated ; the appetite, which was previously voracious, gives way ; the legs become dropsical, and the pulse is quick and weak.

The urine is of a pale straw color, sometimes insipid, but in the great majority of cases it has a sweetish taste and faint smell, somewhat resembling that of violets, and contains a considerable quantity of sugar. The presence of sugar is ascertained by chemical tests. The quantity of urine voided varies from eight to twenty pints daily, and there are well-authenticated cases on record in which the average discharge was from forty to fifty pints a day. The weight of the urine when the disease is confirmed invariably exceeds that of the liquids drunk, and is in some cases greater than both the food and drink consumed, even when the hunger and thirst are extreme. The quantity of sugar contained in the urine is much greater in some cases than in others, and it varies in the urine of the same individual at different times ; an ounce of sugar has been extracted, in several cases, from each pound of urine.

Nature of Diabetes Mellitus.—This form of diabetes is now regarded as a nervous disease, depending on a morbid state of the cord or brain.

Causes.—Various causes have been assigned for this disease, such as exposure to cold when the body is in a state of perspiration, abuse of spirituous liquors, excess in venery, grief, over-physical exertion and mechanical injury or shock, and, in a word, whatever depresses the vital powers ; there can be no doubt that they act as exciting causes, when there is a disposition to the disease in the system.

Diabetes runs its course in some cases in a month or two, and continues in others during several years. It is sometimes complicated with pulmonary consumption or chronic bronchitis, and is so frequently fatal that many medical men, though they admit that it may be much relieved, or even suspended for a time, are nevertheless of opinion that a radical cure cannot be effected.

The prospects of a patient afflicted with diabetes are therefore

not good. Recovery is rare. They may, however, be much benefited by dieting and by medicine, and may live many years.

There is such a condition as *temporary* appearance of sugar in the urine, that does not lead to real diabetes.

Treatment.—There is no specific for this disease. It is found by experience to be best to abstain from sugar and from starch, which is converted into sugar in the process of digestion. Bicarbonate of soda, in doses of a drachm three or four times a day, appears to do good. I have used the following :

Ergotine, 1 drachm (4 grams),
Extract of Belladonna, 4 grains (.25 gram.)

Make twenty pills. Take one or two three times a day.

Remedies that act as tonics and sedatives to the nervous system, or that act as *antiseptics* (see Antiseptics), seem to be of the most service in relieving the symptoms of this disease.

Bromide of potassium, in doses of 20 or 30 grains (1.25 or 2 grams) three times a day, almost always diminishes the quantity of sugar and of urine, as I have found by experience. Likewise any of the other bromides may be used, among the antiseptics.

Carbolic acid, in one-drop doses, in water daily, or *salicylic acid*, in doses of 5 grains (30 centigrams), have been warmly recommended.

The following is a good prescription :

Creosote, 20 drops,
Aromatic powder, 4 scruples (5 grams),
Mucilage acaciaet, as much as may be necessary to make twenty pills.

Take one pill three times a day.

Sulphide of cadmium, in doses of one eighth of a grain, has also been well endorsed. *Opium* and its preparations have done good in very many cases. Half a grain three times daily, increased to a grain or even two grains, has been used. Of the preparations of opium, *codeine* is one of the best.

To lessen the thirst, use *phosphoric acid*, diluted freely in water.

The following prescription has helped a number of cases :

Tannic acid, 1 scruple (1.25 grams),
Tincture of ergot, 3 drachms (12 grams),
Opium, 1 grain (.06 gram).

Take the above quantity three times a day.

Fluid extract of *jaborandi* in doses of one teaspoonful has helped cases.

Dr. Champlin recommends bran bread for diabetic patients. He speaks from personal experience of its efficacy. The formula for making these bran cakes is as follows :

“Take a quantity of wheat bran. Boil it in two successive waters for a quarter of an hour, each time straining it through a sieve ; wash it well with cold water on the sieve, until the water runs off perfectly clear. Squeeze the washed bran in a cloth as dry as possible, then spread it thinly on a dish, and place it in a slow oven. When it is perfectly dry and crisp it is fit for grinding into fine powder.

“The bran thus prepared is ground in the mill for the purpose, and must be sifted through a wire sieve of such fineness as to require the use of a brush to pass it through, and what remains on the sieve must be reground till it is sufficiently soft and fine.

“To prepare a cake, take of this bran powder three or four ounces, three new-laid eggs, one and a half or two ounces of butter, and about half a pint of milk. Mix the eggs with a little of the milk and warm the butter with the remainder of the milk ; stir the whole well together, adding a little nutmeg and ginger, or any other spice that may be agreeable. Bake in small tins (patty-pans, which must be well buttered), in a rather quick oven, for about half an hour. The cakes when baked should be a little thicker than a captain’s biscuit.

“These cakes may be eaten with meat or cheese for breakfast, dinner, and supper, and require a free allowance of butter ; and the cakes are more pleasant if placed in the oven a few minutes before being placed on the table.

“When economy is an object, when a change is required, or if the stomach cannot bear butter, the cakes may be prepared as follows : Take of the prepared bran four ounces, three eggs, about twelve ounces of milk, with a little spice and salt ; to be mixed and put into a basin (previously well buttered). Bake it for about an hour ; the loaf may then be cut into convenient slices and toasted when wanted ; or, after slicing, it may be rebaked and kept in the form of rusks.

“Nothing has yet been discovered of equal utility to these bran cakes, combining, as they do, moderate cost with freedom from starch, and sufficient pleasantness as an article of food.”

However surely an exclusive animal diet may lessen or entirely remove the sugar in the urine of a diabetic patient, it is certain that it cannot long be tolerated. Under its use the appetite fails, and a

loathing of all food soon happens. The necessity of a mixed diet for man has been shown ; and it is as necessary for him when suffering from diabetes as in a state of health. In this disease the nervous system is undoubtedly implicated, and a rigid adherence to animal food alone, were it practicable, would soon be followed by an aggravation of the nervous trouble. There is, from the very beginning, and throughout the course of the disorder, a strong tendency to devitalization, and this, too, must be guarded against. Fortunately, the sugar in the urine may be kept down, and at the same time the general strength of the system maintained, by a properly adjusted diet of mixed food. Along, then, with the carnivorous dietary, fish, oysters and lobsters, and certain vegetables may be permitted, not only with impunity, but with advantage, and these are cabbage, cauliflowers, onions, spinach, water-cress, sorrel, turnips, lettuce, etc. Trousseau has found no ill consequences from eating acid fruits, as strawberries, gooseberries, cherries ; and he has allowed apples, pears, and grapes. He even suffers his diabetic patients to eat a small quantity of bread, if they greatly crave it, for, as he remarks, there are many persons who are unable to make a meal without it. Such a regimen is more likely to keep the disease stationary, and secure the general comfort of the patient, by upholding his strength, than by confining him to one kind of diet, which his stomach soon revolts against, and which must result in innutrition, general debility, the development of intercurrent affections, and, sooner or later, death. Enforced daily exercise in the open air, when possible, just short of fatigue, is of as much importance in the treatment of diabetes as diet. Gymnastics should be practised. Trousseau says that he has repeatedly seen, during the hunting season, diabetic patients, abroad with their gun and dog, cease both to drink and urinate to excess, and regain their strength, and even their virile powers. A suit of flannel or buckskin should be worn next the skin. Warm alkaline baths should be frequently taken.

Dr. Donkin, of Dublin, uses exclusively skim-milk diet. All the cream is taken off, and three, four, six, or ten pints are given in twenty-four hours. If this diet acts well it should help the case in a week.

Kumyss has also been tried with advantage as a substitute for skim-milk.

DIABETES INSIPIDUS (*Polydipsia*, *Polyuria*).

In this malady there is great flow of urine, but no sugar. It is not necessary to abstain from starch or sugar.

The best treatment is *fluid extract of ergot* in one-teaspoonful doses three times daily. Increase to two teaspoonfuls. If this fails, use *opium* and *gallic acid* combined, in pills of one grain each.

DIARRHEA—FLUX—LOOSENESS OF THE BOWELS—
PURGING.

This is a common and well-known disorder, characterized by more frequent and thinner evacuations from the bowels than natural, accompanied or not with griping pains in the belly, and occurring generally without fever. Diarrhea is frequently a prelude to dysentery, and both these disorders are caused by a morbid state of the mucous or lining membrane of the bowels: in the former there is simply irritation or relaxation of the mucous membrane; in the latter there is inflammation, attended with constant pain and fever.

Diarrhea arises, in the majority of cases, from errors in diet, and may take place from eating too much, from unwholesome food, or from a peculiarity of the patient's constitution, which allows him to be acted on by certain articles of diet which would produce no unpleasant effect on other people. Other not unfrequent causes are checked perspiration from exposure to cold, sitting with wet feet, drinking cold water, cider, beer, or other cold beverages, and taking ices when the body is overheated at the time; suppression of the menstrual or other evacuations, and increased or depraved secretion of bile. In some constitutions this affection comes on from sudden fright, surprise, anger, or any other strong mental emotion; and is also common in fever and measles, and generally accompanies the last stage of pulmonary consumption. Diarrhea is frequently induced in warm climates by *malaria*, and is in all countries occasionally epidemic, from causes of whose nature we know little or nothing.

Diarrhea, from whatever cause it may proceed, is commonly announced by flatulency, slight distension and griping of the bowels, and sickness at stomach. In some cases the belly is considerably swollen, hot, and painful. The patient feels relieved after each evacuation, which is voided without the slightest straining. The stools vary from six or eight to twenty or more in number in the course of twenty-four hours, and are at first copious, and appear

as if a dose of salts had been taken, but afterwards scanty and watery, in some cases mixed with bile, and in others with mucus.

Treatment.—The first thing to be taken into consideration, in directing the treatment of diarrhea, is the cause which has produced or may still keep it up.

When diarrhea arises from over-eating, from irritating or unwholesome food, or from constipation of the bowels, it is then an effort of nature to expel the offending matter, and ought not therefore to be checked abruptly by astringent remedies, which, though of great service when judiciously used, are often given indiscriminately in all cases of this disorder, which they frequently aggravate, or bring on other diseases of a more serious character. In many cases the efforts of nature are sufficient to restore the bowels to a healthy state, and in general there is very little occasion for the interference of art. In most cases a mild dose of castor oil, or the following mixture, is all that is necessary :

Rhubarb in powder, 15 grains (1 gram),
Henry's magnesia, 1 scruple (1.25 grams),
Cinnamon-water, 1½ ounces (48 grams),
Compound tincture of lavender, ½ drachm (2 grams). Mix.

Observe these simple rules ; they will answer for the great majority of cases :

1. *Do not check it too early.*—If treatment is commenced at the outset, some mild laxative may be useful, to remove the irritating substances in the bowels.

2. *Use mild astringents.*—The common *chalk mixture* is deservedly popular. For all ordinary diarrhea I use *creosote*, in doses of from *two to six drops*, largely diluted in water. I have had excellent success with it. It may be given every two hours, and may be combined with paregoric, or laudanum, or morphine. The *cholera mixture* (see Cholera Mixture) is to be recommended.

In nearly every form of diarrhea the following prescription is valuable :

Castor oil, ½ drachm (2 grams),
Chloroform, ½ drachm (2 grams),
U. S. solution of morphine, 1 drachm (4 grams),
Quinine, 3 grains (.18 gram),
Powdered gum-arabic, 3 drachms (12 grams),
Simple syrup, ½ ounce (16 grams),
Water, 4 ounces (128 grams). Mix.

Dose.—One or two teaspoonfuls every hour until improvement appears.

Gubler and Bonamy, of Paris, use with great success *oxide of zinc* in the following combination :

Oxide of zinc, $52\frac{1}{2}$ grains (3.50 grams),
Bicarbonate of soda, $7\frac{1}{2}$ grains (.50 gram).
Mix and divide into four doses.

DOSE.—One every three hours. This acts quickly and after other remedies have failed.

Camphor alone in small doses—one or two grains (.06 or .12 gram)—will often check an acute diarrhea.

Children are successfully treated by lime-water, by *pepsin*, and by *subnitrate of bismuth*. Laudanum and starch injections are useful in bad cases. Except in severe cases, an astringent mixture should not contain much opium.

The diet in diarrhea should be very bland. Arrowroot and brandy may be taken for a day. Common flour-paste is excellent. Cold drinks should not be used. *The cure will be hastened by staying in the house, keeping in a horizontal position, and binding tightly over the abdomen a flannel bandage.*

A new remedy for diarrhea is *coto bark*. Its active principle is cotoin, which is preferable, as in this formula :

Cotoin, 1 grain (.06 gram),
Alcohol, 12 drops (.36 gram),
Water, 2 ounces (64 grams),
Syrup, 2 ounces (64 grams).

DOSE.—One table-spoonful every hour or two.

Treatment of Chronic Diarrhea.—This is a very obstinate and intractable disorder. *Subnitrate of bismuth* in doses of five grains has been used with success. It was found to be very successful during the late war, in the diarrhea of the army and navy. All the astringents may be tried, one after the other. The common lead-and-opium pill is much used in chronic as in acute diarrhea. *Ipecac*, in vomiting doses, once wrought a remarkable cure in my hands.

The diet must be carefully managed in both chronic and acute diarrhea.

It is necessary to abstain from vegetables and raw fruits, and subsist for a time on bread, meat, rice, etc.

The following prescriptions are good :

Carbolic acid, 2 grains (.12 gram),
Water, 2 ounces (64 grams).

DOSE.—One or two teaspoonfuls four times a day.

Subnitrate of bismuth, 1 scruple (1.25 grams),
Tannic acid, 3 grains (.18 gram),
Powdered ipecac, 3 grains (.18 gram).

Take this powder four times a day.

The above prescription of *cotoïn* is also good in chronic diarrhea.

DIARRHEA, OR LOOSENESS OF THE BOWELS IN INFANTS. (See Management of Children.)

DIPSOMANIA—METHOMANIA.

This is the insanity of hard drinkers. It is not so uncommon a disease as is supposed. Most of the gross intemperance of our day is the result of *disease of the brain*. Spirituous liquors in great excess and largely adulterated often injure the brain, and deprive the individual of his *self-control*. This is one of the worst effects of hard drinking. Opium has the same effect. Such persons can never be saved by the pledge. They violate all pledges. They plunge headlong to destruction. In spite of the tears of their families, in spite of warnings, in spite of the horrors of impending poverty, in spite of disease and threatening death, in spite of the most solemn promises to themselves and to their friends, they cannot resist the temptation to drink to excess. For all such persons we should be as charitable as we are for those who are raving mad. *They are not responsible beings*. The time has come when we must *revise* our treatment of drunkenness. When we administer pledges we do not give protection. (See Inebriety and Insanity.)

In the article on Inebriety the whole subject is discussed in detail.

DIPHTHERIA—PUTRID SORE THROAT.

The name diphtheria was first given in 1827. The *disease* has been known for centuries. In some sections of the country it is more frequent than in others. It may be either a very mild or a very severe disease.

Causes.—Diphtheria is caused by the inoculation of the air-passages with the diphtheritic poison, which, from this point, infects the whole system; the fever and general symptoms are the result of this local infection.

“Diphtheria is, therefore, a contagious disease (not perhaps as marked as scarlet fever) induced by contact with persons and objects infected. It may be diffused by the exhalations of the sick, by the air surrounding them, or directly by the exudation, communicated in the act of kissing, coughing, spitting, sneezing, or by the infected articles used, as towels, napkins, handkerchiefs, etc. The poison clings with great tenacity to certain places, rooms, and houses, where it may occasion cases after the lapse of months.”

Symptoms.—The *symptoms* are *sore throat, general exhaustion, swelling of the glands behind the jaw, dryness of throat, difficulty of swallowing, fever, headache, and disturbance of digestion; bad breath, rapid pulse, thick yellowish deposit or exudation on the tonsils and in the throat.* See Plate III. Fig. A shows first stage of inflammation of the tonsils and throat, and is often the result of a cold. Fig. B shows second stage when ulceration appears, and is what is known as an ulcerated throat. Fig. C represents a more advanced stage of ulceration, or diphtheria. Fig. D shows the false membrane.

Some very mild cases do not have *all* of these symptoms. In the milder cases there may be very little fever, and the exudation may be very slight indeed, and the symptoms subside on the third or fourth day. In the worst cases there is a *high fever*, very great swelling of the glands, great difficulty of swallowing; sometimes exceedingly offensive breath; hemorrhage from the mouth, rectum, or stomach, and in the last stages stupor. Death may take place in two, three, or six days.

Sometimes albumen is found in the urine; sometimes a blistered or abraded surface on the body will be covered with a whitish membrane; sometimes *lung fever* occurs.

Diphtheria often leaves bad effects behind it, even when the patient recovers. It leaves paralysis; it leaves disorders of the eye or of the ear.

Diphtheria is a *constitutional* disease—a blood disease, and not merely a local inflammation of the throat. I knew a patient who died from mere exhaustion after the throat had entirely recovered. It is a *poison* in the system, and the affection of the throat is only *one* of the accompanying symptoms. It should be remembered that sore throat, and even whitish exudation in the throat, does not always mean diphtheria. Many persons who have suffered from



DIPHTHERIA (Primary and Secondary Stages.)

Anatomically drawn and colored by W.E. Koester and Chrono Lithographed expressly for "Our Home Physician."

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some attack of sore throat, that perhaps may have been accompanied by some slight deposit in the tonsils, oftentimes erroneously suppose that they have recovered from an attack of diphtheria. Physicians used to make the same mistakes.

The mild form of this disease is not usually fatal ; the malignant form is one of the most dangerous diseases that we have to contend with.

Treatment.—There is no specific for diphtheria. Moreover, it is one of those diseases that demand the best-trained medical skill that can be obtained ; and those are particularly unfortunate who are attacked with the grave form of this disease when far away from home.

The most recent and most successful method of treating diphtheria is by disinfectants and tonics, such as muriate tincture of iron, chlorate of potash, salicylic and carbolic acid, and sulphite of soda.

The following prescriptions have been recommended by Dr. Billington :

Muriate tincture of iron, 1 drachm (4 grams),
Glycerine and water, each, 1 ounce (32 grams).

DOSE.—One teaspoonful every hour ; or

Salicylic acid, 10 grains (.60 gram),
Sulphite of soda, $\frac{1}{2}$ drachm (2 grams),
Glycerine, $\frac{1}{2}$ ounce (16 grams),
Water, $2\frac{1}{2}$ ounces (80 grams).

DOSE.—A teaspoonful every hour, alternating at half-hour intervals with the above iron mixture.

The following may be frequently applied to the throat by means of the common perfumery atomizer, or by a probang :

Carbolic acid, 15 drops (1 gram),
Lime-water, 6 ounces (192 grams).

Besides this there are various local applications that the skilful physician can make. The nasal passages should be cleansed by the nasal syringe. Quinine internally in moderate doses is also recommended.

Dr. Billington estimates that about sixty per cent of cases of diphtheria recover spontaneously ; five per cent will die in spite of the best of treatment. Much depends on the care with which the

details are carried out. Hence a good nurse as well as a good physician is needed. Ice may be given freely. Cold milk and egg-nog are recommended, as means of sustaining the strength, but stimulants are not to be recklessly used.

I have reason to know that the above treatment has been satisfactory in many cases. Another well-recommended combination is this :

Chlorate of potash, 10 grains (.60 gram),
 Muriate tincture of iron, 5 drops (.15 gram),
 Syrup of orange-peel, $\frac{1}{2}$ drachm (2 grams),
 Water, two drachms (8 grams).

Take all the above at a dose.

“Wonderful cures” are claimed by Dr. Wiles, of London, and others, in the use of powdered sulphur, blown into the throat through a quill ; or by a gargle of one teaspoonful of sulphur in a wineglass of water, thoroughly dissolved. If the patient cannot gargle, let him inhale sulphur fumes, as follows : Take a live coal on a shovel, and sprinkle a spoonful or two of powdered sulphur upon it.

When there is difficulty of swallowing, the strength may be kept up by enemata, or injections into the rectum of beef-tea and wine. In some cases large quantities of alcoholic liquors can be borne and are needed. *Paralysis following diphtheria*, in whatever part of the body it may occur, should be treated by *strychnine*, *iron*, and *electricity*. (See Paralysis.)

Local treatment in the throat.—This, after all, is a secondary matter, although it is of importance. *Ice in small pieces*, creosote or carbolic acid, or glycerine, gargles of chlorate of potash, of alum, or of chlorinated soda—all may be tried. With all of these substances the solutions should be made just strong enough to *smart slightly*, but not stronger. Better have the solutions too weak than too strong. Outside the neck, flannels wrung in hot water afford relief.

Precautions.—The following valuable suggestions are published by the Board of Health of New York, C. F. Chandler, M.D., President :

“*The Dwelling or Apartment.*—Cleanliness in and around the dwelling, and pure air in living and sleeping rooms, are of the utmost importance where any contagious disease is prevailing, as cleanliness tends both to prevent and mitigate it. Every kind and source of filth around and in the house should be thoroughly re-

moved ; cellars and foul areas should be cleaned and disinfected ; drains should be put in perfect repair ; dirty walls and ceilings should be lime-washed, and every occupied room should be thoroughly ventilated. Apartments which have been occupied by persons sick with diphtheria should be cleansed with disinfectants ; ceilings lime-washed and woodwork painted ; the carpets, bedclothing, upholstered furniture, etc., exposed many days to fresh air and the sunlight (all articles which may be boiled or subjected to high degrees of heat should be thus disinfected) ; such rooms should be exposed to currents of fresh air for at least one week before reoccupation.

“ *When Diphtheria is Prevailing.*—No child should be allowed to kiss strange children nor those suffering from sore throat (the disgusting custom of compelling children to kiss every visitor is a well-contrived method of propagating other grave diseases than diphtheria) ; nor should it sleep with nor be confined to rooms occupied by, or use articles, as toys, taken in the mouth, handkerchiefs, etc., belonging to children having sore throat, croup, or catarrh. If the weather is cold, the child should be warmly clad with flannels.

“ *When Diphtheria is in the House or in the Family.*—The well children should be scrupulously kept apart from the sick in dry, well-aired rooms, and every possible source of infection through the air, by personal contact with the sick, and by articles used about them or in their rooms, should be rigidly guarded. Every attack of sore throat, cough, and catarrh should be at once attended to ; the feeble should have invigorating food and treatment.

“ *Sick Children.*—The sick should be rigidly isolated in well-aired (the air being entirely changed at least hourly), sunlighted rooms, the outflow of air being, as far as possible, through the external windows by depressing the upper and elevating the lower sash, or a chimney heated by a fire in an open fireplace ; all discharges from the mouth and nose should be received into vessels containing disinfectants, as solutions of carbolic acid or sulphate of zinc ; or upon cloths, which are immediately burned ; or, if not burned, thoroughly boiled or placed under a disinfecting fluid.”

DOSES, WEIGHTS AND MEASURES.

The remedies mentioned and doses of medicine prescribed in this work are for ADULTS.

In order to determine the doses for children of various ages, the following rules of Gaubius are very reliable :

For children one	year old	$\frac{1}{13}$	of the dose for an adult.
“	two	years “	$\frac{1}{8}$ “ “ “
“	three	“ “	$\frac{1}{6}$ “ “ “
“	four	“ “	$\frac{1}{4}$ “ “ “
“	seven	“ “	$\frac{1}{3}$ “ “ “
“	fourteen	“ “	$\frac{1}{2}$ “ “ “

In giving any of the preparations of opium to children—morphine, or laudanum, or paregoric, or Dover's powder, or cold powder, or simple powdered opium, or any prescription that contains opium or narcotics, the proportionate dose should be even less, because children are much more susceptible to opium than adults.

In all cases it is better to be on the safe side—to *give too little rather than too much*. It is therefore well to *begin* with the smallest dose mentioned, and increase it gradually until the full dose is reached.

LIQUID MEASURE FOR HOME USE.

60 drops or minims	is used for	1	teaspoonful.
1 teaspoonful	“ “	1	fluid drachm, or $\frac{1}{8}$ ounce.
4 teaspoonfuls	“ “	1	table-spoonful.
1 table-spoonful	“ “	4	fluid drachms, or $\frac{1}{2}$ ounce.
2 table-spoonfuls	“ “	8	“ “ “ 1 ounce.
1 wineglassful	“ “	2	“ ounces.
1 teacupful	“ “	6	“ “ “ 1 gill.
1 pint	“ “	16	“ “

DRY MEASURE FOR HOME USE.

1 teaspoonful	=	60	grains.
1 teaspoonful	=	1	drachm.
1 table-spoonful	=	4	drachms, or $\frac{1}{2}$ ounce.
2 table-spoonfuls	=	1	ounce.

These measures, though not accurate, are sufficiently so for all practical purposes, except in powerful medicines.

APOTHECARIES' DRY MEASURE, WITH THEIR EQUIVALENTS IN THE METRIC SYSTEM.

1 scruple (ʒ)	=	20	grains (gr.) (1.25 grams).
3 scruples	=	60	“ or 1 drachm (4 grams).
8 drachms (ʒ)	=	1	ounce (32 grams).
12 ounces (℔)	=	1	pound (lb.) (384 grams).

APOTHECARIES' FLUID MEASURE.

60 minims or drops	=	1 fluid drachm (4 grams).
8 fluid drachms	=	1 " ounce (32 grams).
16 " ounces	=	1 pint (500 grams).
2 " pints	=	1 quart (1000 grams).

EXPLANATION OF MEDICAL CHARACTERS.

℞ scruple, or sc.	℥ drachm, or dr.
℞ i one scruple.	℥ i one drachm.
℞ ss half a scruple.	℥ ss half a drachm.
℞ iss one scruple and a half.	℥ iss one drachm and a half.
℞ ij two scruples.	℥ ij two drachms.
℥ ounce, or oz.	M minim, or drop.
℥ i one ounce.	f ℥ fluid drachm.
℥ ss half an ounce.	f ℥ fluid ounce.
℥ iss one ounce and a half.	O pint, or sixteen ounces.
℥ ij two ounces.	℔ pound.
<i>āā</i> means <i>of each</i> .	<i>M.</i> means mix.
<i>Coch.</i> " spoonful.	<i>Mist.</i> " a mixture.
<i>Cong.</i> " gallon.	<i>Pulv.</i> " a powder.
<i>Decoct.</i> " decoction.	<i>Q. S.</i> " sufficient quantity.
<i>Ft.</i> " make.	℞ " <i>recipe</i> , or take.
<i>Garg.</i> " gargle.	<i>S.</i> " write.
<i>Gtt.</i> " drop.	<i>Ss.</i> " a half.

Doses—Metric System.—The metric or decimal system of weights and measures is already legalized in America, and is destined to supersede the absurd and arbitrary tables now in use. It is as much simpler than the old, complicated methods, as reckoning in dollars and cents is simpler than reckoning in pounds, shillings, and pence, guineas, half-crowns, etc.

The principle can be seen at a glance by any one who understands decimal currency. There are but a few new terms to remember, and it is an easy matter to transpose to or from our ordinary weights and measures. There may be a few who are too old, and there are surely many who are too lazy to learn this system, but it is now being taught in our schools, and in time will prevail here as it does now in Continental Europe.

To illustrate the system, it will only be necessary here to give the substitute for Apothecaries', Avoirdupois, and Troy weights. The reader knows how long it took him or her to learn those tables, and whether they are forgotten or not. By contrast, compare the simplicity of the metric system. The unit of weight is the gram (equal to about 16 grains). With this unit we weigh drugs, precious metals, and, in short, all ponderable articles of whatever value. As in decimal currency we have dollars, cents, and mills,

so in decimal weight we have grams, centigrams, and milligrams. Four grams and a quarter are written with a decimal point like four dollars and a quarter (4.25—grams 4.25).

By referring to the prescriptions throughout this book, the metric amounts will usually be found following the ordinary weights or measures, and the physician who devotes a few minutes' study to the subject will see how easy it is to transpose from the old system into the new. After trying the new system in his daily prescriptions (and the druggist will never demur, but will be more ready than the physician to introduce the system), a facility in computing the proportion of ingredients will be acquired, time will be saved, and the risk of mistakes in prescribing will be greatly lessened. All that is to be learned is, that a gram is equal to about 16 grains, and centigrams and milligrams are hundredth and thousandth parts of the gram.

For convenience the following tables may be referred to :

1 grain (gr.) = 0.06 grams.	1 gram = 16 grains.
1 scruple (℥) = 1.25 “	1 centigram = $\frac{1}{16}$ grain.
1 drachm (ʒ) = 4.00 “	1 milligram = $\frac{1}{160}$ “
1 ounce (℥) = 32.00 “	

The tables are not strictly accurate, but near enough for all practical purposes, and the physician who is not deterred from the use of the metric system by the necessity of translating his prescriptions for a few weeks, will soon be glad to throw aside his grains, scruples, and drachms, and will derive the greatest satisfaction from both thinking and writing in a philosophical language.

DROPPED WRIST.—A condition that is found in *Lead Palsy*. (See *Lead Colic*, also *Palsy* or *Paralysis*.)

DROPSY.

Various names are given to this disorder, according to the parts in which the fluid is deposited : if in the general cellular substance, it is called *anasarca*; in the belly, *ascites*; in the chest, *hydrothorax*; in the head, *hydrocephalus*; and in the testicle, *hydrocele*.

Dropsy is either active or passive.

Causes.—*Active or acute dropsy* may be general, in consequence of increased action of the heart, induced by various causes, such as exposure to a cold, moist atmosphere, particularly when the body is in a state of perspiration from active exercise or

long exposure to heat, suppression of the menses or other customary evacuations, sudden disappearance or repression of eruptive diseases, abuse of spirituous liquors, etc. ; or it may be local, arising from irritation or inflammation of the parts where the fluid is deposited ; for example, dropsy of the belly or chest may take place in consequence of increased action in the vessels of the serous membrane which lines these cavities.

Passive dropsy arises in general from causes which impede the circulation of blood in the veins, such as various tumors pressing on the great blood-vessels, ossification of the valves of the heart, etc. The blood being, from these or similar causes, retarded in its course, the vessels become distended, and at length relieve themselves by pouring out the watery part of the blood. This form of dropsy sometimes comes on from directly debilitating causes, such as repeated blood-letting, or excessive loss of blood from other causes ; inordinate discharges of every description ; poor or relaxing diet ; drinking immoderate quantities of watery fluids ; living in low, damp situations ; long-continued chronic diseases, as pulmonary consumption, dysentery, etc., and various other debilitating causes.

Symptoms.—Dropsy, in fact, is generally a symptom or sequence of other disorders, and rarely a disease of itself, arising, in the great majority of cases, from organic disease of the heart, lungs, liver, kidneys, and other internal organs.

GENERAL DROPSY (*anasarca*)

Is either acute or passive, and consists in the effusion of *serum*, or the watery part of the blood, into the cellular substance situated beneath the skin.

Passive general dropsy may arise from any of the debilitating causes above mentioned, but occurs most frequently from disease of the heart or some internal organ. Under these circumstances, the fluid is thrown out slowly ; the face or the feet and the ankles are swollen at night ; and the parts pit on pressure, which is a characteristic symptom of the affection. At the commencement of the disease the swelling disappears in the morning ; but after some time becomes more permanent, and gradually ascends higher, until the whole body is affected. While the dropsy is gradually increasing, the face and eyelids become sallow, swollen, and bloated, the breathing oppressed, and the pulse frequent, weak, and sometimes intermitting. There is considerable thirst, the urine is scanty and high-colored, the appetite greatly diminished, the bowels are constipated, and towards the termina-

tion of the disease there is great debility, and the mental faculties are much impaired.

Acute general dropsy commonly arises from some cause capable of suddenly checking perspiration, or it comes on during convalescence from scarlet fever or measles. This form of dropsy is decidedly inflammatory, and may result from exposure to cold, wet, or any of the ordinary causes of inflammation. It is ushered in by shivering, full or hard pulse, headache, thirst, and heat of surface. These symptoms, in the course of twenty-four hours, are followed by dropsical swelling, which generally appears first in the face, and shortly afterwards extends to the trunk and extremities of the body. In most cases there are well-marked inflammatory symptoms accompanied with headache, a sensation of tightness about the chest, and difficulty of breathing; but sometimes there is very little general excitement, and the pulse may not rise above the natural standard. Dropsy, attended with inflammatory symptoms more or less acute, frequently follows scarlet fever, both in children and adults; and the one disease may supervene upon the other in the course of a few days or weeks. Acute general dropsy is usually associated with inflammation of some internal organ; but cases are occasionally met with in which no local disorder can be traced.

DROPSY OF THE BELLY (*ascites*).

Causes.—This is the most common of all kinds of dropsy, and may come on at any period of life. The causes which have been already enumerated as capable of developing general dropsy may also bring on this form of the disease, which, as in the former affections, may be either active or passive; but in the great majority of cases it comes on slowly, without inflammatory action, and is symptomatic of organic disorder of the abdominal viscera, more especially of the liver. Another not unfrequent cause is inflammation, either acute or chronic, of the *peritoneum*, or lining membrane of the belly.

Symptoms.—The water accumulates first at the lower part of the belly, which gradually enlarges, and the swelling goes on increasing until the entire abdomen becomes very prominent, tense, and shining. The swelling may be observed to gravitate towards the side on which the patient leans; and if the left hand be placed on one side of the belly, and a smart tap be given to the opposite side with the right hand, the water may be felt fluctuating. There are in most cases considerable thirst, loss of appetite, and dry cough, and the urine is scanty and of a dark brown color.

When the water has accumulated to a considerable extent, the breathing is oppressed, and the face and parts of the body not consecutively infiltrated become much emaciated. In some cases the feet and ankles are swollen before any change is observed in the size of the belly; but in general the lower extremities are not affected until the abdominal dropsy has existed some time.

Dropsy, as we have already mentioned, is almost invariably a symptom of organic disorder, and therefore, in order to direct the treatment on scientific principles, it is of the utmost importance that the organ affected should be known. In general there are well-marked symptoms of visceral obstruction before dropsy makes its appearance, and after it is considerably developed the general appearance of the patient allows a sufficiently accurate opinion to be formed with regard to the organ which has given rise to the affusion. When the belly is much enlarged and the lower extremities swollen, while the arms and upper parts of the body are emaciated, the face being at the same time thin, sharp, and of a sallow, dingy color, it may be inferred that the liver is diseased, or, at all events, that the cause of the dropsy is situated in the belly; on the other hand, when the face is bloated, the lips swollen, so that the mouth remains partially open, and the eyes as if protruding from their orbits, there is every reason to suppose that the obstruction is in the chest, and that most probably the heart is diseased; and this opinion will be strengthened if it be ascertained that the dropsical swelling commenced at the feet and ankles, and subsequently extended to the belly. The reverse of this takes place when dropsy arises from inflammation of the *peritoneum*, or from obstruction of the liver, or of any other abdominal organ; here the swelling of the lower extremities of the body is always a consecutive symptom.

There is another kind of dropsy of the belly, called Encysted Dropsy, in which the water is confined in a cyst, or membranous bag. In this case the swelling is at first unequal and confined to a particular part, and when the affection is further advanced the belly is never so uniformly distended as in the former variety, where the water is loose in the abdominal cavity. Encysted dropsy progresses slowly, is entirely local, and not attended with disorder of the general health.

DROPSY OF THE CHEST.

Causes.—This affection frequently results from inflammation, either acute or chronic, of the *pleura*, or serous membrane which lines the cavity of the chest, and envelops the organs contained in

it ; or it may take place from any of the causes which give rise to general dropsy, but chiefly from diseases of the heart and lungs. When the effusion is the consequence of inflammation of the pleura, the water is generally confined to one side of the chest, and is merely a symptom of pleurisy ; but when it arises from organic disease of an internal organ, the water collects slowly in both sides of the chest, and constitutes, in connection with the original affection, a very formidable and dangerous disease.

Symptoms.—When dropsy of the chest proceeds from disease of the heart, the first symptoms generally observed are, a swollen state of the eyelids in the morning, and of the feet and ankles at bed-time, accompanied with slight oppression of the chest and difficulty in breathing. The patient may be affected in this manner during a considerable length of time without suffering much inconvenience, until the water, which has been gradually accumulating, at last increases to such an extent that a train of very alarming symptoms is brought on. The face becomes much swollen and bloated ; the lips assume a livid tint, approaching at times to a deep purple color ; the breathing is greatly oppressed ; the patient starts in his sleep, and cannot lie in bed without having his head and shoulders raised with additional pillows ; and towards the termination of the disease, the sensation of suffocation is so distressing on lying down that he is compelled to sleep sitting in a chair. The difficulty of breathing is much increased by going upstairs, or by any ordinary exercise ; the pulse is generally irregular and intermitting ; and the feeling of anxiety is at times very distressing, and strongly depicted on the countenance. To these symptoms are generally added palpitations of the heart and a troublesome dry cough.

When water collects in the chest in consequence of bronchitis or of inflammation of the lungs, the difficulty of breathing, and of lying in a horizontal position, is the same as in the former case ; but the effusion is seldom to the same extent, and is not attended with palpitations of the heart and intermitting pulse. Although the above symptoms generally accompany water in the chest, yet they may arise from organic disorders of the heart and lungs, independent of dropsy ; and there is no doubt that prior to the discovery of the stethoscope, diseases of these organs were frequently mistaken for this affection.

Treatment.—The different varieties of dropsy are all to be treated on the same general principles.

1. Give jalap and cream-of-tartar by some such prescription as this :

Jalap, 20 grains (1.25 grams),
 Cream-of-tartar, 6 ounces (192 grams).

DOSE.—Give one third or one half of this every day or two.

The object of this medicine is to act freely on the bowels and kidneys. *Sweet spirit of nitre* is much given, to act on the kidneys. In bad cases, where the bowels are very obstinate, *elaterium* may be given, in doses of one eighth of a grain or one quarter of a grain (.007 or .015 gram), every four or five hours.

Within the past few years, the new remedy *jaborandi*, or its active principle *pilocarpine*, has been used for dropsy, in some cases very successfully.

DOSE.—Take 10 to 15 grains (.60 to 1 gram) daily, or teaspoonful doses of the fluid extract of *jaborandi*.

When the patient is weak and feeble, tonics should be given—iron, quinine, strychnine, and nourishing food.

When in spite of all treatment the water remains, it may become necessary, in dropsy of the belly, to *tap* the patient. This operation is performed by the surgeon.

But, after all, the directions that I can give for the treatment of dropsy are at best very general and unsatisfactory. Dropsy is *not a disease*; it is a *symptom* of a disease. The true way to treat it is to treat the disease that causes it. What this disease may be can only be ascertained by the experienced physician. It is most apt to depend on some disease of one of these three organs—the *liver*, the *heart*, and the *kidneys*. It is a very common symptom in Bright's disease of the kidney. (See Kidney, Diseases of.)

ACUTE DROPSY OF THE BRAIN

Is a very frequent and fatal disease among children. It consists in an inflammation of the membranes which surround the brain or line its central cavities—the dropsy (or effusion of fluid into the cavities) being nothing more than an accidental occurrence towards the close of the disease, nearly in the same way as dropsy of the belly may follow disease of the liver, or dropsy of the chest may attend disease of the heart.

Causes.—It is often difficult to assign any cause for this complaint, because it frequently attacks robust children in the midst of apparent health; but we know from experience that it has been produced by the following causes: blows upon the head, exposure of the head to a hot sun, the sudden removal of some eruption on the head, irritation of the brain, occasioned by teething or

by derangement of the bowels, and, finally, the disturbance of the blood-circulation in the brain, which often takes place in the course of whooping-cough, measles, scarlet fever, or small-pox. But of all the exciting causes of this fatal complaint, none is more frequent than scrofula. In a great number of cases it depends on a true scrofulous inflammation of the brain or its membranes. This explains the insidious nature of the complaint, its prevalence in certain families, the hereditary tendency to it, and its fatal termination; for we have every reason to fear that one species of this malady is just as fatal amongst children as pulmonary consumption is amongst grown-up people.

Symptoms.—To understand the nature and cause of the *premonitory* symptoms, we should state that it has been shown that acute dropsy of the brain is often preceded, for months or years, by a slow *scrofulous* inflammation of the membranes of the brain. The existence, then, of this scrofulous inflammation of the brain, or, in other words, the *premonitory stage* of acute dropsy in the head, is indicated by the following signs: The child loses its natural liveliness of temper, and becomes dull and morose; the sleep is disturbed, and the little patient is often drowsy during the day; he complains every now and then of headache; the bowels are usually costive, and occasional vomiting, with accesses of fever and tenderness of the belly, is noticed; the gait of the child is sometimes very peculiar during this stage: he staggers when walking, stumbles without any cause, or may drag one foot after him; squinting and convulsive movements are sometimes observed, with a bending in of the thumbs, and curving of the toes towards the soles of the feet. These symptoms may last, as we have said, for several months or years; they are frequently mistaken for infantile remittent fever; but at length severe headache, with vomiting, constipation, and stupor, supervenes, and the slow disease becomes all at once converted into the acute malady.

Acute dropsy of the brain almost invariably proves fatal when it has passed the *first* stage without having been relieved; our great anxiety should therefore be to detect the disease in its most early stages, and not to confound it with other complaints of children, to which it may bear some resemblance. The symptoms of the *first* stage of acute dropsy of the brain should be *distinguished* from those of typhus fever, from the commencement of eruptive disorders, and from the peculiar head symptoms which sometimes accompany exhaustion of the vital powers in young children.

Treatment.—1. Give purgatives. Adapt the quality and quan-

tity to the strength and age of the patient. Keep the bowels free, but do not exhaust the patient.

2. Apply blisters and cups to the back of the neck.
3. Apply cold to the head, but with great caution.
4. Give *iodide of potassium* internally, in doses suited to the age of the patient. This causes absorption of the fluid in the brain.
5. Give nourishing but easily digested food. Beef-tea, mutton, broth, and milk are to be recommended.

These measures are about all that we can do.

CHRONIC DROPSY OF THE BRAIN.

Chronic dropsy of the brain consists in the slow collection of a clear fluid in the cavities of the brain, generally accompanied by gradual enlargement of the head. This disease may either occur in the child before it is born, or may come on very soon after birth. In the first case, it is usually attended by such changes in the brain itself as render it impossible for the child to live; in the second case, the head enlarges slowly, or even retains its natural size, and some small hope remains of obtaining a cure; hence we shall confine ourselves to giving an account of this latter form.

Causes.—The causes which excite chronic dropsy of the brain in children are very obscure. It is said to occur most frequently in the children of scrofulous parents, as a consequence of fright experienced during pregnancy; as the effect of depressing passions, drunkenness, etc., on the part of the mother; it may also be produced in the infant after birth by improper food, teething, spirituous liquors, affections of the bowels, or other complaints which reduce the strength.

Symptoms.—Chronic dropsy of the brain sometimes comes on in a very insidious manner, and often escapes our notice at an early stage. When the natural articulations of the head are open, and the skull much enlarged in size, with a sensation of fluctuation at the anterior part of the crown of the head, there can be no mistake about the nature of the disease; but when the skull retains its natural shape and size, or enlarges very slowly, and when the child's health is not much deranged, it is not an easy matter to discover the nature of the complaint, although it is of the utmost importance that we should be acquainted with its existence as soon as possible. The early symptoms, then, of chronic dropsy of the brain are: an unusual peevishness and perversity of temper, dullness, and an inclination to sleep; irregular appetite, with constipation of the bowels and scanty urine; if the child be able to walk about, it will often be observed that the legs are weak and small in

proportion to the rest of the body, while the belly is large and tense. The senses of hearing and seeing are at first acute, but soon become dull, and are more or less injured ; the child cannot articulate words distinctly ; the tongue seems to be getting too large for the mouth, and the mental faculties are also weakened. These latter symptoms should always excite our attention to the state of the head in young children ; the head should be carefully measured with a tape, and if it be found to have increased very sensibly in a short time, we may be almost certain that the child labors under chronic dropsy of the brain.

As the disease advances the symptoms become more clear. The mental and bodily powers are more or less injured ; the memory is lost, and the power of speech much diminished ; a copious saliva flows from the mouth ; the child is unable to support himself on his legs, and the head begins to hang on one side ; the pupils are dilated, the sight lost, and the eyes frequently affected with squinting ; the bowels are still irregular, and the contents of the stomach are often vomited up.

In the *third stage* of the disease the head becomes so enlarged that the child is no longer able to support it ; he lies in a state of stupidity, and does not notice what passes around him ; the senses are almost completely destroyed ; the power of moving is lost, the evacuations are passed without the patient's being conscious of them ; in this state he lies for a considerable time, when he is cut off by convulsions, or sinks into profound insensibility, which soon terminates in death.

Treatment.—It is impossible to cure these cases. They may, however, linger many years. Usually they die in a few months or years.

The best we can do is to sustain the strength of the patient by tonics, good food, and leave the results with Providence.

I may say just here that the friends of patients usually make a serious mistake when they follow after unprincipled quacks in order to obtain relief from diseases that have been proved to be incurable by the experience of honorable and scientific men.

There are many excellent people who run after every charlatan they can hear of, and seem to prefer their advice to that of sensible and reliable physicians.

While it is true that happy guesses are sometimes made by these swindlers, it is also true that in the great majority of cases they are less successful than are educated physicians, and oftentimes they do incalculable harm.

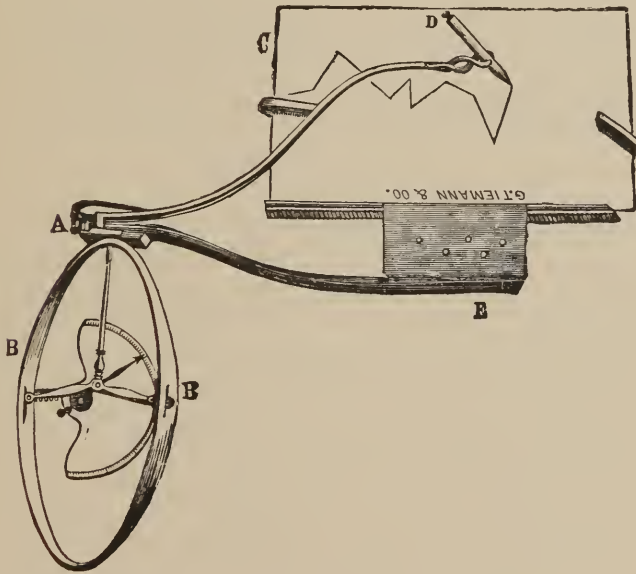
DROWSINESS.

A disposition to sleep excessively or to feel sleepy. It is the state that precedes sleep. It is sometimes the forerunner of disease of the brain or of Bright's Disease. Nervously exhausted dyspeptic sufferers sometimes are troubled with drowsiness, but more frequently with wakefulness.

DYNAMOMETER.

This apparatus is used to test the strength of paralyzed arms. By means of this the physician can determine the condition of the limb, and the progress of the case under treatment.

The clock-work attachment is similar to that connected with the Sphygmograph. (See Sphygmograph.)



DRUNKENNESS. (See Alcoholism and Inebriety.)

DUMB AGUE. (See Ague.)

DYSENTERY.

In treating of dysentery, the division into acute and chronic may be adopted, though the disease presents many different forms and complications.

Causes.—Dysentery prevails chiefly in autumn and the beginning of winter, during cold, moist weather, following great heat or long-continued drought ; or it may be induced by high ranges of temperature, succeeding to moist and very wet weather. An attack may be brought on by exposure to cold and wet, or to the dews of night, particularly after fatigue ; by wearing damp clothing, by scanty and unwholesome food or drink, eating acid or unripe fruits, the use of water contaminated with impurities, breathing air rendered impure by many persons being crowded together, as in camps, vessels, prisons, etc., and then the disease is likely to assume the typhoid and malignant forms, and may become highly contagious ; by constipation and the accumulation of morbid biliary secretions, the use of intoxicating liquors in excess, very rich stimulating diet, exhalations from the soil and from marshes, as well as putrid animal exhalations and epidemic states of the atmosphere. In hot countries the disease is frequently associated with worms, particularly in the dark races, who are peculiarly subject to bowel complaints.

Chronic dysentery differs only in degree from the acute form, and arises from the same causes.

ACUTE DYSENTERY.

Symptoms.—Acute dysentery is usually preceded by a disordered state of the stomach and bowels, as indicated by nausea, vomiting, loss of appetite, flatulence, and constipation, or the bowels may have been relaxed for some time previous. It commences with frequent evacuations, accompanied by severe griping pains, great desire to strain while at stool, and a burning sensation at the *rectum* and *anus* ; there are frequent chills, followed by flashes of heat ; the pulse is quick, or perhaps not much affected ; the stools at first may be copious and feculent, and contain pieces of hardened feces, but they soon become scanty, and consist chiefly of mucous matter tinged with blood ; a dull, uneasy sensation is felt in the belly, which is relieved after each evacuation ; the tongue is furred, and there is considerable thirst. These are the most prominent symptoms of the disease as it occurs in its mildest forms, but in its more severe states all the symptoms are aggravated ; the calls to stool are very frequent and distressing, and sometimes accompanied with cramps in the thighs and legs ; the abdominal pain is more constant, and increased on pressure with the hand, though often merely a feeling of heat is complained of, except when a motion is about to be passed ; the tongue is thickly coated, and the appetite gone, while the thirst becomes urgent, the patient preferring cold water,

Plate D.



CLOVE. *Caryophyllus*,



ASSAFOETIDA. *Ferula A.*,



DANDELION. — *Taraxacum*,



LINSEED. *Linum Usitatissimum*,



FIGS. — *Ficus*,



GINSENG. — *Panax*,

each draught of which is invariably followed by severe griping ; the urine is high-colored, passed in small quantities, and often with great pain and difficulty ; the skin is hot and dry, or perhaps only feels hot over the abdomen, the extremities being cold, though sometimes there may be free perspiration. With the advance of the disease the strength gives way, there is despondency, rapid emaciation ensues, and the straining is occasionally so violent that a portion of the gut descends beyond the *anus*, greatly augmenting the suffering. As a fatal termination approaches, the abdomen becomes swelled and tender to the touch ; the tongue dry and glazed, or covered with a dry brown fur ; the motions are passed in bed, the patient being unable to get out to reach the close-stool ; the extremities of the body become cold, and delirium, hiccup, and cold, clammy perspirations, are the forerunners of death.

The character of the evacuations varies much, both as regards appearance and quantity ; sometimes they are copious and watery, containing shreds of matter like the washings of beef, or they are scanty, and of a dark-brown or greenish color, with streaks of blood ; at other times, after violent straining, only a small quantity of slimy mucus is passed. The odor in all cases is peculiar, but sometimes it is extremely offensive, particularly in the last stage ; the motions may then be composed of pure blood, or a dark fluid, mixed with feculent matter, and occasionally small whitish masses resembling fat are discharged.

The disease in its worst form may terminate in a few days, though generally its duration is from two to five weeks. The symptoms may be considered favorable when the griping pain and straining at stool diminish, and the motions are less frequent and more healthy in their appearance, while a gentle perspiration breaks out over the whole body, with abatement of the febrile excitement. It may be remarked that changes for the better will sometimes take place, resembling remissions ; these may last for twelve or twenty hours, or longer, and be followed by a return of all the bad symptoms.

In warm climates, dysentery is witnessed in its most intense forms, and is very frequently complicated with great derangement of the biliary organs or disease of the liver. With most of the symptoms of the first or most common variety, the tongue has a yellow coating or a white covering over its surface, and appears swollen or larger than natural ; there is nausea and bilious vomiting, occasional chills, hot, dry skin, and quick, irritable pulse ; the burning sensation in the rectum and straining at stool are very severe ; the evacuations may be copious, yellow-colored, or of a

dark brown color and uniform consistence ; and sometimes they are frothy, and have a greenish, mixed appearance, with streaks of blood. The stools at the commencement, and even through the course of the disorder, may be little if at all tinged with blood, though usually in the last stage they are mixed with dark bloody matter. A dull, heavy, uneasy feeling is experienced in the right side, increased by pressing with the fingers under the ribs, the pain often stretching to the right shoulder, where there may be a constant aching sensation ; there is sometimes a feeling of oppression at the chest ; the patient is troubled with a harassing, irritating cough ; and in the last stage the tongue is red, smooth, or dark-colored and dry. The first symptoms of dysentery, where the liver has been long diseased, are frequently a sensation of fulness and uneasiness at the stomach and right side, copious discharges of bilious matter, with pain of belly and griping.

Treatment.—1. *Rest.* The patient must keep perfectly quiet, in a horizontal position. This is the first and great requisite to success.

2. A dose of castor oil, a table-spoonful, with ten to thirty drops of laudanum. If the patient is seen early, this old-fashioned treatment is excellent. It clears the bowels of irritating substances.

3. *Dover's powder*, or the *cold powder*, in doses of from three to five grains. The Dover's powder may be given in doses of ten or fifteen grains (.62 or .93 gram), if necessary. (See Cold Powder and Dover's Powder.)

The following prescription will frequently be found of service :

Opium, 6 grains (.36 gram),
 Ipecac, 24 grains (1.50 grams),
 Calomel, 12 grains (.72 gram),
 Mucilage or syrup, as much as is necessary.

Mix, and divide into twelve pills. Take one every five hours.

4. Inject starch and laudanum into the bowels (twenty drops of laudanum to one ounce (32 grams) of starch), in order to relieve the straining and irritation, and the burning sensation.

5. *Sugar of lead* is sometimes given internally in the *form of the lead and opium pill* (half a grain (.03 gram) of each in the pill), and is also injected into the bowels in the form of a solution (three or four grains to the ounce).

Pope's Mixture is often given for dysentery. The prescription is :

Nitric acid, 1 drachm (4 grams),
 Laudanum, 40 drops,
 Camphor-water, 8 ounces (256 grams).

The dose is a table-spoonful.

6. *Give stimulants and tonics.*—Quinine, brandy, and opium all are good, and if necessary, when the patient is much exhausted, should be given freely. Among the methods of treatment are the following :

Ergotine in doses of 6 grains (.36 gram) every four hours.

Carbolic Acid in the following formula :

Carbolic acid, 10 drops,
 Aromatic syrup of rhubarb, 1 ounce (32 grams),
 Oil of lemon, 5 drops,
 Oil of sassafras, 5 drops.

DOSE.—One teaspoonful every three hours.

Inject a solution of warm water 100° Fahr. into the rectum. Repeat this treatment a number of times daily.

For the *tenesmus* use the following :

Sulphate of atropine, 1 grain (.06 gram),
 Water, 1 ounce (32 grams). Mix.

DOSE.—One or two drops every hour until the throat is dry.

Dysentery often becomes a disease of debility. The patient falls into a *typhoid* condition. This is always a bad symptom. This condition must be treated by tonics and stimulants.

Dysentery is a disease which sea captains and others who are beyond the ready call of a physician are obliged to treat. It comes on suddenly, and sometimes prostrates a large number of seamen at once. In such cases pains should be taken to thoroughly fumigate the ship, for the disease is always fostered by filth.

The diet of dysenteric patients should be of a mild and soothing character—chicken-water, rice-water, arrowroot, beef-tea, slippery-elm water, gumarabic or flaxseed tea. The intense thirst may be checked by *chewing* bits of *ice*.

Dysentery within the tropics is often extremely insidious in its commencement ; looseness of the bowels and slight griping pains may exist for weeks, unheeded by the patient, until exhaustion of strength and some aggravation of the symptoms compel him to take to bed ; and though the attack has been apparently very mild, yet the delay which has taken place in commencing the treatment may

lead to a fatal termination, whatever means be employed. I cannot, therefore, point out in too strong terms the necessity of attending at once to the slightest derangement of the bowels in tropical climates, since a gentle purgative, followed at night by fifteen grains (.90 gram) of Dover's powder or cold powder, or a pill, composed of two grains (.12 gram) of opium and two grains (.12 gram) of ipecacuanha, repeated for a few nights, and the occasional use of a warm bath, will frequently put a stop to those symptoms which otherwise might have ended in danger or destruction to life.

CHRONIC DYSENTERY.

Symptoms.—In chronic dysentery the pulse is but little disturbed, except towards evening, when it may be quickened and accompanied with slight feverish symptoms; the evacuations are much less frequent than in the acute states, and are seldom attended with much straining, though in general there is a griping or twisting sensation about the navel before each motion, which is entirely relieved after leaving the close-stool. There is not often pain or pressure over the belly (which may be swelled and hard, or flatter than usual), though sometimes there is a heavy feeling, or sensation of heat and soreness, as the patient may express it. The stools vary greatly, even in the same patient, at different times; they may be copious and of a dark-brown color, or white, like clay diffused in water; hence the disease has been called *white flux*; or there is feculent matter intimately mingled with blood; sometimes there is a bloody mucus mixed with a substance resembling matter (pus), or the evacuations have a marbled and greenish appearance.

Treatment.—Chronic dysentery is treated on the same general principles as the acute form. What has already been said on the treatment of acute dysentery need not be here repeated.

In tropical climes, chronic dysentery is very frequent, and sometimes quite fatal.

In addition to the treatment already laid down for acute dysentery, it is well to try the various *astringents*. The disease at best is obstinate.

Simaruba is found very serviceable in this affection. It cured a patient of mine in the Gulf of Mexico, after other measures had entirely failed. *Sugar of lead*, *sulphate of zinc*, *nitrate of silver*, *sulphate of copper*, and *tannic acid* may also be tried in succession. The doses of these medicines are given under their appropriate names. (See list of medicines.)

Compound Tincture of Benzoin may be given as in this formula :

Compound tincture of benzoin, $\frac{1}{2}$ drachm (2 grams),
Compound tincture of catechu, 1 drachm ($\frac{1}{4}$ grams),
Laudanum, 10 grains (.62 gram),
Extract of logwood, 10 grains (.62 gram),
Water, 1 ounce (32 grams).

DOSE.—Take the above quantity at a dose three times a day.

It is absolutely necessary in this disease, but more especially in the chronic form, that the warm or rather tepid bath should be frequently used, in order to keep the skin clean.

With regard to regimen the patient must be particularly guarded, for medicine can be but of little avail if he be induced to satisfy those morbid cravings which are so frequently a symptom of this form of the disease. The diet should be mild, easy of digestion, and unstimulating, being chiefly composed of farinaceous substances, as rice, bread, sago, arrowroot, etc., with milk. The drink also must be mild and demulcent, unless in cases attended with much debility; and where there are no inflammatory symptoms, port-wine in moderation may then be allowed, with water or thin arrowroot, which is perhaps the best method of taking it; and those who have been in the habit of using spirits may take weak brandy and water.

In regard to the management of dysentery, Dr. Austin Flint, in a recent lecture, makes the following observations:

The *diet* for this class of patients should be restricted, theoretically at least, to those articles of food which are as completely digested as possible. This is done upon the principle of keeping an inflamed part at rest. Our object is to prevent, as far as possible, the exercise of any function by the large intestine—that is, we administer nourishment which leaves but little residuum to pass into this portion of the alimentary canal. Cold water and ice applied to the rectum sometimes relieves the tenesmus. Warm, soothing applications over the abdomen usually afford a certain measure of relief. We are to be guided, to a certain extent, by the instincts and desires of the patient, and I am willing to say that, in almost every disease, if the patient has a well-defined desire for any article of food, it is wise to allow it to be taken. We are much safer in following the instincts of the patient, in this respect, than in following out any set of dietetic rules with theoretical form. I cannot but think, that adopting the same general dietetic rules, and endeavoring to apply them to every case, is harmful.

Next, with regard to treatment of the severer cases of dysentery, which are usually epidemic, especially that form in which

we have a history of early and abundant sanguinolent transudation, accompanied by marked prostration. In severe cases of epidemic dysentery, we have to deal with a very formidable disease. What are the indications in its treatment? In general, purgatives are to be avoided. Salines, which operate by producing a more or less abundant watery transudation, are contraindicated.

So far as medical treatment is concerned, our chief reliance must be placed upon opium. Administer opium early and persistently, and to the extent of absolutely quieting the intestines, but at the same time avoiding the risk of narcotism. It is a noteworthy fact that the quantity of opium which can be administered in these cases, without exposing the patient to danger from overuse of the drug, is sometimes very large.

We are to take into account the fact that, in certain cases at least, there is a wonderfully increased tolerance of opium. For example, I have given a patient, suffering from epidemic dysentery, a grain of the sulphate of morphia every hour—twenty-four grains per diem—and continued such doses for several days without producing the least manifestation of narcotism; and the patient was a person not accustomed to taking opium. That was an extraordinary case, it is true, but I have been repeatedly led to observe a greatly increased tolerance of opium in this class of cases.

Astringents may be administered, provided they are well tolerated by the stomach, with a certain amount of benefit—not marked, however—but they should never displace the use of opium.

In our climate we rarely see a case of chronic dysentery. It is essentially a disease of the tropical climates. With regard to sporadic and epidemic dysentery, as it occurs in this climate, there is scarcely any tendency to the supervention of the chronic form of the disease, whereas in tropical climates there is considerable tendency to this result.

It is important to make a correct diagnosis in these cases, but in hospitals it is not always made with accuracy, nor is it always easy to make a discrimination between chronic dysentery and chronic diarrhea, the disease with which chronic dysentery is most frequently confounded. Chronic diarrhea is a much less grave affection than chronic dysentery.

Bismuth is a palliative remedy and one of considerable value in the treatment of chronic dysentery. Not infrequently it diminishes the frequency of the dejections and the abundance of the inflammatory products which they contain. It is a remedy which can be given almost *ad libitum*. It is a remedy which frequently is given in too small doses to produce any curative effect. We should rarely

give less than one scruple (1.25 grams), and from one half drachm (2 grams) to two drachms (8 grams) may be given without producing other disagreeable effects than the inconvenience which may arise from its bulk in the stomach. The various ferruginous and vegetable astringents may be given. They have been regarded by different observers as valuable in the treatment of this affection, and it is our duty to try them in succession.

These patients are to be sustained by *tonic* remedies and a *nutritious diet*. The diet should consist of articles which are as completely as possible digested in the stomach and small intestine, thus leaving the least possible residuum to enter the colon. You will be guided largely by the instincts and experience of the patient with regard to selecting articles of diet. More advantage may, perhaps, be derived from hygienic treatment than from any other. A change of climate is a most important element in the treatment of chronic dysentery. I am speaking particularly of cases occurring in a tropical climate. A change from a warm to a temperate or cold climate is beneficial. A uniformly cold and dry atmosphere is best suited to these cases. During the late civil war, and also during the Mexican war, we had occasion in New York to treat numerous cases of chronic dysentery contracted in the Southern States and in Mexico, and the most effectual measure for their relief was a change of climate; a change to even farther North than this city.

DYMENORRHEA — DIFFICULT MENSTRUATION. (See Menstruation.)

DYSPEPSIA—INDIGESTION—GASTRIC CATARRH.

Dyspepsia is one of the most common, most fashionable, and most annoying of the nervous symptoms of our modern society. Within the past quarter of a century it has increased in frequency and with great rapidity, so that there are very few who pass through life without making its acquaintance.

It is a most capricious, fickle, and uncertain visitor. It appears when it is little looked for, and when we suppose that it has departed from our doors forever, it may suddenly reappear in a more hideous shape than before. It comes and goes without law or order or regularity, and oftentimes without any seeming dependence on our behavior. At some times we may violate all the rules of diet and of hygiene in general without suffering the punishment of dyspepsia; at other times the fiend seizes fast hold of us, and will

not let go his hold, though we pay the uttermost farthing of our debt to the laws of health.

Causes.—It is usually a *result* of over-work, over-worry, over-confinement, bad air, bad and insufficient food, sexual excesses and genital disorders, the abuse of stimulants and narcotics, want of sleep, and, in short, of all influences that tend to depress the vital powers.

It is not brought on by *errors in diet* so frequently as is supposed. Those who are most careful, and even literal and rational in their diet, are frequently the *greatest sufferers* from dyspepsia.

It is brought on by the same diseases that bring on hypochondria, hysteria, nervous exhaustion, spermatorrhea, paralysis, insanity, and other well-known nervous diseases. It often exists in connection with these and other nervous diseases; nearly all hypochondriacal, hysterical, and nervously exhausted patients are more or less dyspeptic.

Like all other nervous diseases, and like all other conditions of the body, both good and bad, dyspepsia is exceedingly *hereditary*.

Symptoms.—Those who have ever suffered from dyspepsia—and who has not?—will not need to be told what its symptoms are. For the benefit of those who have never experienced this malady—if there be any such—I present below a detailed explanation of the *symptoms*.

Accidental attacks of indigestion are of very frequent occurrence, and arise for the most part from overloading the stomach with food and indulging too freely in wine, spirits, or other intoxicating liquors. The principal symptoms are, a sense of fulness, weight, and uneasiness at stomach; foul tongue, a bitter taste in the mouth, nausea, loss of appetite, with a particular aversion to fat or oily substances, and sweet or insipid articles of diet; flatulency, sick headache, and sometimes heartburn. In such cases a gentle emetic of *ipecacuanha*, a draught of warm *chamomile tea*, or irritating the throat with a feather, in order to rid the stomach of the ailment with which it is overcharged; followed by a mild dose of *tincture of rhubarb*, *Gregory's stomachic powder*, or some other gentle laxative; and spare diet for a few days, so as to allow the weakened stomach to recover its tone—are the simple means to be resorted to for the purpose of restoring the healthy functions of the digestive organs. Other causes, however, besides repletion may give rise to an accidental fit of indigestion. Of these we may enumerate articles of food difficult of digestion; certain circumstances occurring shortly after a meal, as exposure to extreme heat or cold, the use of ices, and strong mental excitement; eating

quickly after long fasting ; constipation of the bowels ; accumulation of bile or mucus in the stomach, etc. In all cases of this description, when the disorder can be easily traced to some accidental cause, the above treatment, if no inflammatory or feverish symptoms be present, will soon restore the stomach and bowels to a healthy state.

The chronic form of indigestion, depending on debility or functional derangement of the stomach, commences slowly, and often advances to a considerable extent without particularly attracting the patient's attention. The symptoms that indicate the approach of this insidious disorder are numerous, but we shall only notice those which most frequently present themselves : the sleep is disturbed, and the patient is restless during the night, but in the morning he sleeps heavily, beyond his usual hour of rising, and awakes unrefreshed, with a bitter taste in his mouth. He has very little appetite for breakfast, and can only relish savory articles of food ; during the day he feels languid, and sometimes drowsy, particularly after meals, and has little inclination for exercise or mental exertion. After some time a sensation of dryness in the throat begins to be felt in the morning, attended with expectoration of gray-colored phlegm, and sometimes with slight sore throat. As the disease advances the appetite becomes more impaired, nausea and inclination to vomit are occasionally experienced ; an unpleasant sensation of heat is sometimes felt at the stomach during the day ; disinclination to exercise and mental occupation increases, and there is drowsiness after dinner. These symptoms are followed by a dull, heavy pain in the head, and a feeling of weight at the stomach, with flatulency and heartburn after eating. When this form of indigestion becomes confirmed, the face is pale, the eyes appear dull and heavy, the mouth feels clammy ; the tongue is flabby, pale, or whitish, and more or less furred ; there is a constant sense of fulness and distention in the belly ; and the bowels are irregular, the evacuations being scanty and particularly fetid or copious, and frequently containing bile and portions of half-digested food ; the urine is clear, copious, and, after standing some time, deposits a reddish sediment, indicating acidity in the stomach and bowels ; or it may become turbid and deposit a whitish substance, showing an alkaline state of the contents of the stomach ; the temperature of the body is lower than natural, the feet are often cold, and the pulse is soft and weak. When the disorder is of long continuance, other organs of the body become sympathetically affected ; in some cases there is a troublesome dry cough, or there may be palpitation of the heart and intermitting pulse, which

lead the patient, now low-spirited and timid, to suppose that his heart is diseased, and this idea preys upon his mind and tends to aggravate all the symptoms. The mental powers, particularly of application and memory, become impaired along with the general health and strength. The patient may remain in this state a considerable length of time, and then gradually recover, or the inflammatory form of indigestion about to be described supervenes.

Treatment.—Dyspepsia, unless it is a result or symptom of *ulcer* or *cancer* of the stomach, is not a *fatal* disease.

Indirectly, by reacting injuriously on the cerebro-spinal system, it may bring on softening of the brain, or some incurable disease of the spinal cord. Possibly, also, it may help to bring on insanity. Yet I think that there is a tendency to charge dyspepsia with crimes of which it is not guilty. It must be remembered that dyspepsia is itself often a *result*, an *effect* of exhaustion of the nervous system, and that the brain-disease of which dyspeptic patients often die may itself be the cause of dyspepsia.

The greatest mistakes in medicine, as on all other subjects, are made by confounding effects with causes.

I have very often observed that patients who in their early manhood, and perhaps in adult life, suffer from dyspepsia, in the decline of old age are affected with some disease of the brain or spinal cord. And yet I am not sure that, in such cases, even the dyspepsia is the cause of the disease of the brain. The morbid tendency in the nervous system may simply change its locality. It may leave the stomach, or the nerves that supply the stomach—the *solar plexus*—and go to the brain.

In the treatment of dyspepsia we must therefore consider :

First. That it is usually not so much a symptom of disease of the stomach as of general nervous exhaustion.

There are, however, some cases of purely local disease of the stomach, as *catarrh*, and these need purely *local* treatment.

Dyspepsia that results from inflammation of the lining membrane of the stomach is merely a *local* disease.

Secondly. That the treatment for the nervous variety must therefore be directed to the general system, and not to the stomach merely.

Thirdly. That the treatment must in the main be tonic in its character, although in some cases antiferment medicines or antiseptics are of great value ; such remedies, for example, as *salicine*, in doses of five to ten grains (.30 to .60 gram) before each meal.

Those who understand these three principles are qualified to

treat dyspepsia. Those who do not appreciate these principles will probable fail in their efforts to remove this disease.

Let it also be understood distinctly that dyspepsia *is a relievable and a curable disease*. The common impression that nothing can be done for the dyspeptic is very erroneous. It is true that little can be done for the dyspeptic by ordinary medication, directed merely to the complaining stomach; but with our modern system of treatment it is one of the most *relievable and even curable of any of the nervous diseases of our time*.

The course of treatment for the dyspeptic is as follows :

General faradization and central galvanization (see article on Electro-Therapeutics) used faithfully, skilfully, and perseveringly. For dyspepsia I know of no remedy so efficacious. To this subject I have given long and special attention, and I think that, without over-estimating the method of treatment, it may be regarded as the best of our remedies. In order to be successful, it must be used with the judgment and the studious adaptation to each case that only experience can teach. General electrization is now being studied and employed by many physicians in various parts of the country, and will soon become much more widely known than it is at present. It takes time, both for the patient and for the physician who administers it; but the dyspeptic who is not willing to take time to get well does not deserve to get better.

The Movement Cure, including Massage (see article on Movement Cure and Massage). These are most valuable remedies for dyspepsia, as for many other conditions of nervous debility. A patient may use the two methods of treatment at the same time. There is no necessary interference.

3. *A generous and palatable variety of food.*

The old-fashioned habit of "dieting for dyspepsia" was based on the radical error that dyspepsia was caused by over-eating. The reverse is very often the case. *Under-feeding, going without meals*, eating hard, dry, indigestible, and ill-nourishing food, such as pork and boiled cabbage, and soggy bread and vile pastry—these errors of diet may cause dyspepsia, but rarely does simple and *regular over-eating of good food bring on permanent dyspepsia, but it does in some cases that I have seen*.

The dyspeptic, above all others, needs to be *nourished*. Starvation is sure to work injury, and rarely fails to aggravate the disease. The dyspeptic should take his meals with good regularity—should eat plenty of fresh beef, mutton, lamb, chicken, turkey, and eggs, oysters, fish, light bread, white or brown, as may suit him best. He should *have a variety of food at each meal*, especially at

dinner. He may, if he chooses, use with advantage light sour wine or cider with his meals instead of tea and coffee. Rhine wine and claret are usually agreeable and beneficial to the dyspeptic, but are not necessary for a cure.

In regard to the choice of food, each person must judge for himself, by his own experience. As a rule, dyspeptics find it to their advantage to abstain from pork, salt or fresh, hard-boiled eggs, soggy bread, heavy pastry, rich confectionery, and some of the vegetables; also from strong tea and coffee. In some cases it is a great advantage to live light for a few days, and then to return to full diet. When milk agrees with one, it is an excellent food for dyspeptics. Undoubtedly, it is better, if possible, to have the dinner in the middle of the day, instead of at night.

4. *Plenty of sleep.*—Sleep is food for the nerves. Let the dyspeptic seek sleep at any time or at all times, whenever he may feel disposed. A short nap before dinner rests the stomach, and prepares it for the digestion of food.

5. *Spongio-piline and wet compresses worn against the pit of the stomach.* (See articles on Spongio-piline and Water Cure.)—Great relief for the pain in the stomach, and for the indefinable uneasiness and sense of “goneness” that dyspeptics feel, is afforded by the spongio-piline compress. It may be worn for days, and weeks, and months. Sometimes it affords relief of pain and distress in the stomach in half an hour from the time of application. The wet compress is also of use, applied in the same way, but is less neat and convenient than the modern spongio-piline.

6. *A liberal variety of moderate exercise in the sunlight.*—The great mistake of dyspeptics is to exercise too violently and too long. When a person finds out that he is suffering from dyspepsia, he often feels that it is his duty to take long walks, or to toil hard at the wood-pile before breakfast; to tramp fifteen or twenty miles a day; to exercise furiously in the gymnasium with dumb-bells and on parallel bars. All this is an extreme. When the stomach is weak the body usually shares more or less in that weakness. This is especially the case in the so-called nervous dyspepsia. An engine that is poorly supplied with fuel, and in which the fire is half out, cannot be expected to draw as heavy a load of cars as an engine that is well supplied with fuel, in which the fires are briskly burning.

Just so a man whose appetite is capricious, who cannot digest his food, and who is more or less starved, cannot be expected to perform as much labor as a man with a vigorous appetite, who thoroughly digests his food, and who is consequently well nourished.

The dyspeptic should always bear in mind these rules in regard to exercise :

First. Never exercise hard or long before breakfast, for that is a blunder that is almost a crime.

Secondly. Never exercise very hard just before or just after meals, except in emergencies. It is not necessary to be squeamish on that point.

Thirdly. Take the kind of exercise which you most enjoy, if you are so situated that you can do so, and change from one form to another as often as you get tired.

Fourthly. Never exercise to absolute exhaustion, if you can avoid it.

For more detailed hygienic suggestions the reader is referred to my chapters on *Air, Sunlight, Exercise, Food, Stimulants*, and *Narcotics*. The views and facts therein presented are of special interest to the dyspeptic.

7. *Rest, travel, and change of occupation.*—For the dyspeptic, *rest* is oftentimes more useful than exercise. It is well to take short and frequent vacations, to throw off the cares and the trials of business, and simply vegetate in some quiet nook, when our humor may lead us. The nervous dyspeptic would do well to study and acquire the art of *lounging* or *loafing*. Some dyspeptics think that they are benefited by smoking, especially when the effect of the tobacco is to calm, to soothe, to make the hours glide easily and unconsciously. When tobacco has the opposite effect—to excite, to irritate, to increase nervousness—it injures the dyspeptic.

Travelling often cures dyspepsia, but it is by no means a certain remedy, nor is it necessary to a cure.

A sea-voyage to Europe often does good to the dyspeptic, not on account of the sea-sickness which it produces, but in spite of it. Sea-voyages, if not too long, are beneficial to the dyspeptic in two ways. First, by giving him opportunity and means of *rest*, and quiet and freedom from the strifes and din and worry of business life on shore. (See Sea-sickness.) Secondly, by the tonic and calming effects of the sea-air itself.

Mountain air and climbing mountains are better for many dyspeptics.

Internal remedies.—As a rule, *tonics and stimulants* best serve our purpose. Caswell's or Wyeth's elixir of iron and quinine are both good. (See List of Medicines.) *Subnitrate of bismuth*, in five-grain doses, is much used, and *sulphite of soda* is recommended in doses of five or ten grains (.30 or .60 gram).

The following combination is most excellent :

Tincture of nux vomica, 1 ounce (32 grams),
Fowler's Solution of arsenic, 1 drachm (4 grams),
Wine of pepsin, 2 ounces (64 grams).

DOSE.—One half teaspoonful after meals. Five drops of muriatic acid in water just after meals, or the tincture of *Eucalyptus* and *Hydrastes*, equal parts. Dose, one half teaspoonful before meals.

Pepsin is much used, alone or combined with malt, and in some cases it is certainly beneficial. But, after all, it is not well to place much reliance on internal medication. (For further remarks see Nervous Diseases.)

DISEASES OF THE EAR.

The chief diseases of the ear are inflammatory, and affect the outer and middle portion. The nerve which is in the inner ear is sometimes, but rarely, the seat of disease. The canal leading down to the drum of the ear is affected by the following-named diseases :

1. Inflammation.
2. Eczema, or salt rheum.
3. Hardening of the wax.

The treatment for a redness, tenderness, and swelling of the outer ear, should be chiefly confined to the very frequent use of warm water. This is conducted into the ear by means of a fountain syringe. The warm water should be used every fifteen minutes until the pain is subdued. When the canal is very much swelled the surgeon will often cut the parts with a surgical knife. Poultices will very often quiet the pain, but there is danger, in using them for many hours in succession, that they will cause harm by breaking down the structure of the ear ; hence warm water is better. Leeches are only necessary in the treatment of diseases of the middle ear, but they do not relieve the pain from an inflammation of the external ear.

2. *Eczema or Salt Rheum of the Ear* is a disease of the skin of the outer ear. It is to be treated constitutionally and locally. Arsenic is the drug usually given, while the general health is to be carefully attended to by appropriate means. Locally the ear is to be kept free from the scales and crusts of the disease by the free use of warm water. Vaseline may be smeared over the outer part of the ear.

3. *Hardening of the Wax*.—Hard wax does not collect in the

ear as often as has been supposed ; when it does, however, it should be removed by syringing with warm water. It is probable that wax does not become black and hard and fill up the ear unless there has been some inflammation before. Persons who suffer frequently from hardening of the wax will soon become hard of hearing from chronic inflammation. The wax may be softened before it is removed by pouring in a warmed solution of ordinary baking soda a few times every two hours before the ear is syringed.

4. *Foreign Bodies in the Ear.*—If a substance, such as a button, bead, or the like, or any insect, has got into the ear in any way, it should be removed by syringing with warm water. No instrument should be introduced into the ear to remove any such foreign body, unless a thorough attempt has been made to remove it by syringing. If instruments are introduced, none but a competent surgeon should use them, and he will seldom or never need such an aid. Substances remaining in the ear will do no harm for a long time, while improper attempts to remove them have caused the greatest injury in many cases ; and sometimes death has resulted from careless manipulation.

DISEASES OF THE MIDDLE EAR.

By far the greater number of cases of earache are due to an acute inflammation of the middle ear—that is, of the drum, the Eustachian tube, and mastoid cells, the parts that as a whole constitute the middle ear.

Acute inflammation of the middle ear usually begins in the throat, and travels along the Eustachian tube to the drum of the ear, or that portion of the organ of hearing situated between the membrane of the drum and the nerve. If unchecked, it may pass outward through this membrane or to the brain. The latter result is very dangerous to life. Such an inflammation is usually the result of exposure to a draught, of getting the feet wet, or of similar causes of catching cold. There is great pain in the ear, noises in the head, and fever occur.

The treatment must be prompt and energetic. Leeches should be applied just in front of the external opening of the ear, and warm or hot water be kept in the ear constantly until the pain is subdued. A hot foot-bath should be given, and the patient kept in a warm room.

If matter has formed in the ear and is discharging, it should be removed from once to three times a day by syringing ; and then an astringent of some kind, which has been previously warmed, say of alum, of the strength of one to three grains to the ounce, may

be dropped into the ear. Deafness from imperfect action of the Eustachian tube, or the canal leading from the throat to the ear, is apt to remain after these attacks of acute inflammation, or it may occur of itself. The tube does not open as it should during the action of swallowing, consequently the interchange of air between the middle ear and pharynx is not effected; the drumhead of the ear sinks inwards, there being a greater pressure upon its outer than upon its inner surface; and deafness from improper or imperfect conduction of the waves of sound results. In such cases the muscles that open the tube should be kept in action by a gargle of alum, or chlorate of potash, or cold water, while at intervals of twenty-four hours air is forced through the Eustachian tube by the following method:

The affected person takes a little water in the mouth, which he is instructed to hold there until he is told to swallow it. The operator then takes a tube of india-rubber, or the like, of about twelve inches in length, and inserts one extremity in one nostril of the patient, at the same time closing the other with the finger. He then places the other extremity in his mouth, and causes the patient to swallow at the instant he forces a column of air from his own lungs into the tube. He may indicate the proper instant by a gesture. The air will be forced against the mouth of the tube, and, in most instances, through the tube itself into the ear. This procedure may be repeated three or four times, and it is usually followed by considerable improvement in the hearing.

A chronic discharge of pus or matter from the ear should be treated by careful and daily syringing with warm water, afterwards dropping in an astringent such as has been mentioned, always warming it before use. It is a very obstinate affection, but it is also a dangerous one to life, and should always be carefully and thoroughly treated until the discharge ceases. Many children and some adults die every year in consequence of a neglect of a discharge from the ear.

CHRONIC AFFECTIONS OF THE MIDDLE EAR.

The most frequent causes of impairment of hearing, unattended by pain or discharge, are chronic inflammation of the middle ear. The symptoms are impairment of hearing and a constant noise in the ears or head. This noise is usually more troublesome to the patients than the impairment of hearing. These chronic cases are often obscure in origin and insidious in progress. Perhaps colds in the head in childhood are among the chief causes. What is called catarrh of the nostrils and throat is also a common cause of

chronic catarrh of the ear. Very few persons recover from a chronic inflammation of the ear that is unattended by discharge. Something may be sometimes done to arrest the progress of the disease, but many persons, in spite of the best of care and treatment, remain hard of hearing and suffer through life from noises in the ear.

The results of chronic discharges of pus from the ear are :

1. Tumors or polypi.
2. Disease of the bones.
3. Inflammation of the brain.
4. Poisoning of the blood.
5. Total deafness.

All these affections are very serious, and show the necessity for an early treatment of an inflammation of the ear. More than half of the inmates of deaf-and-dumb asylums became deaf from diseases of the ear that are usually cured or greatly alleviated by an early recognition and treatment.

AFFECTIONS OF THE NERVE OF THE EAR.

As has been said, these diseases are uncommon as compared with the affections of the outer and middle ear. They are caused by (1) syphilis ; (2) spotted fever, cerebro-spinal meningitis ; (3) mumps ; (4) diseases of the brain ; (5) living amidst a constant noise. Affections of the ear caused by syphilis are usually very much benefited by the appropriate treatment for that disease. The other forms of deafness from diseases of the nerve are not very much relieved by treatment. Boiler-makers, who are nearly all hard of hearing, as a result of working in an incessant noise, may secure some relief by wearing cotton in the ears.

EAR-TRUMPETS.

The cuts represent some specimens of ear-trumpets, in which, unfortunately, quite a large number of people are more or less interested.

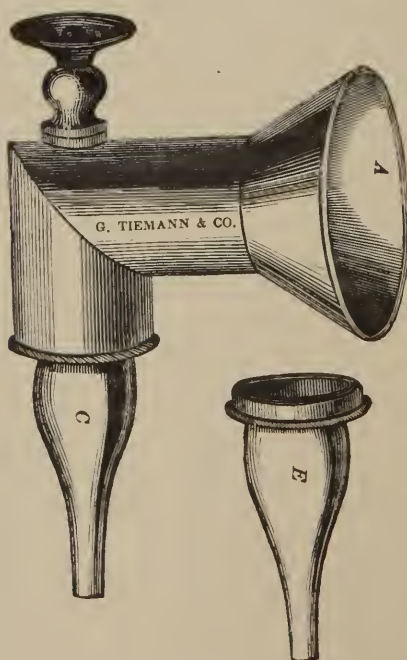
The best course to pursue when impairment of hearing occurs is to consult *without delay* some surgeon, to ascertain the *cause* of the trouble, and if possible to have it removed. Oftentimes it will be found that the loss of hearing is only due to a collection of wax, that will be revealed to the surgeon by the otoscope, and may easily be removed by careful and persistent syringing with warm water ; more frequently it will be found to depend on some form of inflammation that has extended from the throat to the middle ear, but which, if taken in time, may be relieved or cured. The *great*



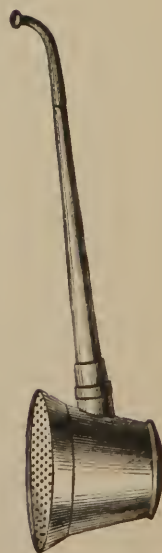
EAR TRUMPETS (SIZES 1 AND 2).



CONVERSATIONAL TUBE.



OTOSCOPE.



DIPPER TRUMPET.



MILK CRUST (*Eczema Infantilis*)
SCALDED HEAD (*Eczema Faciei*)
From Photographs of Skin Diseases taken from Life under the direction of Geo. Henry Fox M.D.
E.B. TREAT N.Y. PUBLISHER.

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mistake of patients is to defer consulting medical advice for their impairment of hearing until relief or cure is no longer possible. For those who from neglect or from misfortune are afflicted with very *severe* and *incurable* deafness, the only remedy is to be found in some form of ear-trumpet. Many object to using these from motives of delicacy. The sensitiveness is both foolish and unnecessary. The incurably deaf, like the incurably blind, ought to meet their unpleasant fate honestly and squarely, and should not be ashamed to use any legitimate measures that may render their existence more comfortable. Unfortunately the best of our trumpets are more conspicuous and unsightly than eye-glasses or spectacles. "Spectacles for the ears" have not yet been discovered.

We need not be without hope, however, that in future time advancing science may devise some form of ear-trumpet that shall be more useful and less annoying than those that we now have.

ECLAMPSIA. (See Puerperal Convulsions.)

ECTHYMA. (See Skin, Diseases of the.)

ECTOZOA.

Animal parasites, as lice and the itch insect, that live on the surface of the body.

ECZEMA (MOIST TETTER, SALT RHEUM, MILK-CRUST, SCALD HEAD).

Eczema is the most common of all skin diseases, and manifests itself in a great variety of forms (see Plates VI. and VIII.). It attacks persons of all ages, and no portion of the body is exempt. In its acute form it begins with an eruption of numerous small vesicles on a swollen and reddened base, and is succeeded by a moist inflamed surface, upon which crusts are frequently formed. In its chronic form it is usually dry, and bears a resemblance to psoriasis or dry tetter, although it lacks the thick white scales with abrupt margins which are met with in the latter disease. A burning or itching sensation is usually a prominent symptom, and often a distressing one. In infants eruption appears by preference upon the face and about the ears, and assumes the moist form. In some cases pustules develop, and their contents dry into thick, unsightly crusts (milk-crust). This eruption in infants has rarely if ever any connection with teething, as is supposed by many ; and it is an

error to suppose that any harm can possibly result from its speedy cure.

It cannot be “driven in,” except theoretically, while its persistence, by causing the child to fret constantly and lose sleep, may do much harm.

Treatment.—The infant’s diet must be looked after with the greatest care, and a pure atmosphere supplied. Frequent bathing of the affected skin does more harm than good, especially when combined with the use of tar and sulphur soaps. Exposure to the drying influence of the air should not be permitted save when changing the dressings. All crusts should be removed by poulticing and soft rags applied to the skin, after being smeared with any ointment that is perfectly bland and unirritating.

Eczema of the hands is often of long standing; and the cracks which form in the natural creases of the skin, particularly on the palm or surface of the fingers, are extremely painful.

Treatment.—Keep the hands out of water as much as possible, and wear rubber gloves at night.

Eczema of the legs is a frequent disease of advanced life, and is sometimes associated with varicose veins and ulcers.

Treatment.—When the skin is thickened, dry, and scaly, frictions with soap are of great benefit in lessening the itching and reducing the leg to its normal size. The soap should be thoroughly removed after the rubbing, the leg dried, and an ointment of oxide of zinc or diachylon applied by means of linen rags and a bandage.

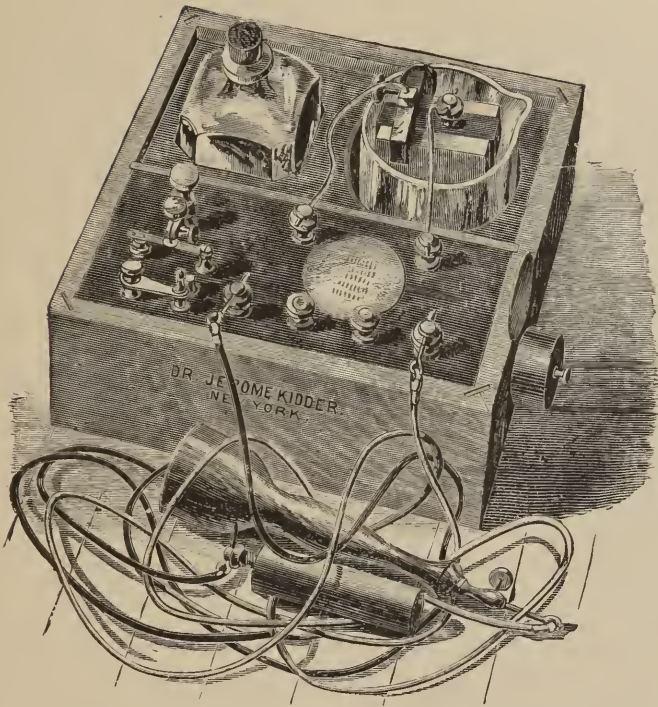
In the cure of eczema, success so often depends upon trifling details of treatment that should simple measures fail to do good, an experienced physician should be consulted. The disease is often obstinate, but always curable.

ELECTRO-THERAPEUTICS — ELECTRICITY — ELECTRIFICATION.

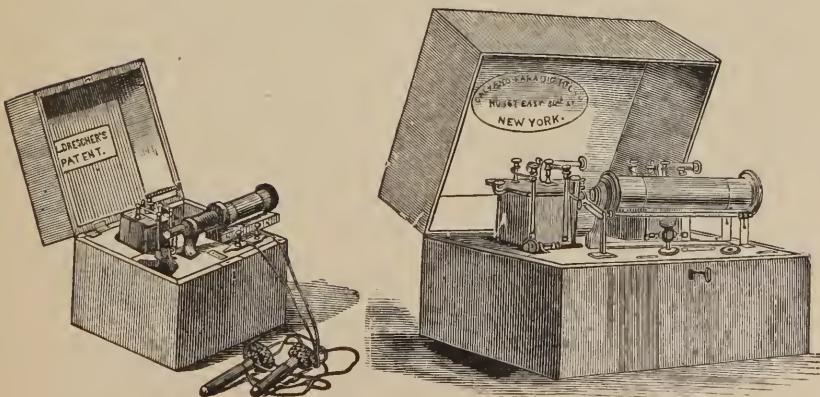
Electro-Therapeutics is the use of electricity in the treatment of disease.

Electricity has been used for the treatment of disease for more than a century.

At first, sparks from the Leyden jar were employed. Then the electricity generated by frictional machines was used. These frictional machines are now exhibited among the philosophical instruments of our schools and colleges. All sorts of diseases were treated by this frictional electricity—paralysis, St. Vitus’s dance, rheumatism, and many other conditions of disease were treated by this agent, and oftentimes with apparent or real success.



ONE OF THE FORMS OF APPARATUS FOR FARADIZATION.



Small size, for family use.

Large size, for professional use.

ELECTRO-MAGNETIC MACHINES.

The *Voltaic pile* was also used to treat disease, and at one time it was thought that it would cure all maladies.

The profession, however, became disappointed with the results, and for these reasons :

1. *The apparatus of those days were not reliable.*
2. *They did not know in what diseases electricity was most useful.*
3. *They did not know how to apply the electricity.*

But in spite of all the efforts of these able men, electrization, for the reasons above given, fell into disrepute.

After the discovery of the induction current by Faraday, in



FIG. 1.



FIG. 2.



FIG. 3.



FIG. 4.

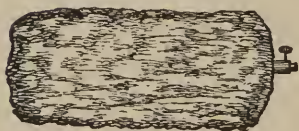


FIG. 5.



FIG. 6.

1 and 2, sponge-covered carbon electrodes—large and small size. Fig. 3, circular sponge-covered electrode for sympathetic nerve. Fig. 4, elongated sponge-covered electrode for phrenic nerve. Fig. 5, metallic sponge-covered carbon foot-plate and pole-cord. Fig. 6, spoon-shaped electrode, mounted and insulated.

1834, a new impetus was given to this department. Masson and Duchenne and Remak in Europe experimented and wrote on this subject, and really created a new era for electro-therapeutics.

Since 1850, more than one hundred books and pamphlets have been written on the application of electricity to disease.

In Europe, electricity is largely used in the form of *localized electrization* for the cure of paralysis, neuralgia, and many other affections. It is exciting more and more attention.

In this country, electricity has been until recently almost entirely in the hands of quacks, or at least ignorant men.

Electricity has wonderfully increased in popularity in the profession during the past ten years. It is now used whenever seda-

tive tonic effects are desired, as *sleeplessness, dyspepsia, nervous exhaustion, neuralgia, rheumatism*, paralysis, insanity, hysteria, chorea, certain diseases of women, of the skin, and, indeed, in nearly all kinds of nervous diseases. It is a remedy that must be used with judgment; it is capable of doing evil as well as good. Some patients who are very weak will bear but little of it; others who are very strong will bear it in almost any amount. It is without question the most powerful tonic we have. Cases of hysteria and allied disorders that have resisted every thing are sometimes rapidly and permanently cured by general faradization or central galvanization, and there are many forms of paralysis that can only be treated with success by faradization or galvanization of the affected muscles.

Electricity is more used in the United States than in any other country.

METHODS OF ELECTRIZATION.

Two currents are now used—the faradic, or to-and-fro induced current, and the galvanic, or constant current.

There are several methods of using electricity for the treatment of disease: *General faradization, localized faradization, partial electrization, central galvanization, local galvanization, galvanocautery, and electrolysis* (see Electrolysis).

General faradization and central galvanization are American methods, and were first described by Dr. Rockwell and myself.

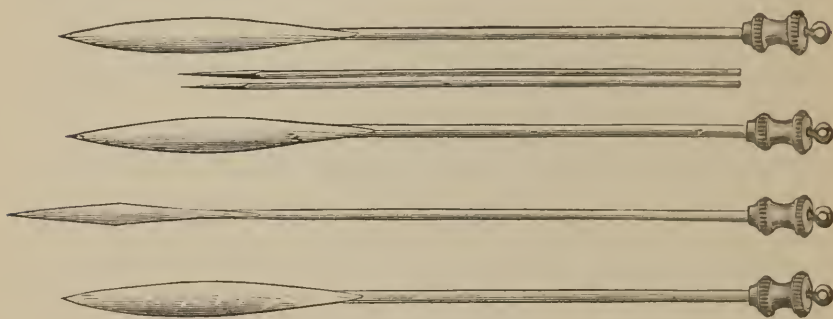
Static electricity, from the old-fashioned frictional method, is not now much used. When used it is called after Franklin, *franklinization*, just as the use of the faradic current (after Faraday) is called *faradization*, and of the *galvanic* current (after Galvani) is called *galvanization*.

Localized faradization was first employed by Masson, and was developed and popularized by the efforts and writings of Duchenne, of France. In this method the poles are applied near each other through separate parts or organs, with a view to local effects merely. It is chiefly used for *paralysis, neuralgia, and rheumatism*, and in the treatment of tumors, to relieve the pain or cause their dissipation.

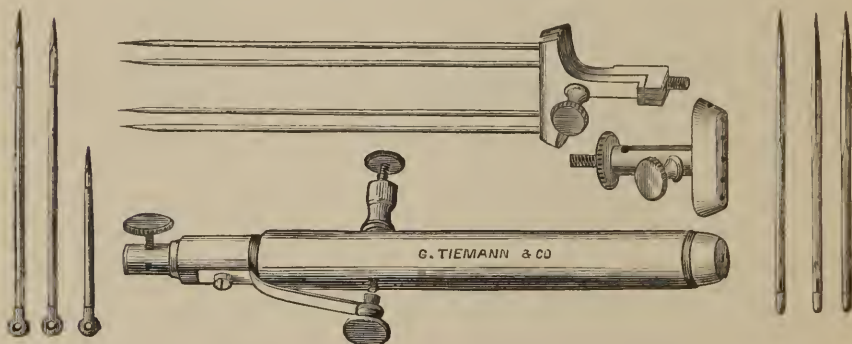
ELECTRIC DISKS—ELECTROLYSIS.

This is chemical decomposition by means of the galvanic current of electricity. Needles (see cut) are inserted in a tumor—a mother's mark, for example—or an aneurism, or a cancer of the lip. These needles are connected with the poles of a galvanic bat-

tery. By a result of the chemical action of the current, the blood is coagulated in the aneurism or wen, or mother's mark, and the clot is subsequently absorbed. Goitres are decomposed, and



ELECTROLYSIS NEEDLES.



HANDLE AND CLAMP FOR ELECTROLYSIS NEEDLES.

also cancers somewhat ; but cancers of the breast are liable to recur, although the pain can be relieved.

ELEPHANTIASIS. (See Skin Diseases, also Leprosy.)

EMBOLISM.—A condition in which a piece of fibrin is carried from the heart and lodged in the circulation, so as to block up some small artery. Embolism in the brain sometimes causes paralysis. (See Apoplexy.)

EMPHYSEMA.

Undue *distension* of the *air-cells* of the lungs. It is one of the *results of bronchitis*.

Symptoms.—Shortness of breath, cough, and inability to take much exercise.

Treatment.—The treatment of emphysema is mainly hygienic. Avoid taking cold. Dress warmly. Eat and drink properly. If possible, remove to a warm and equable climate. (See Lungs, Diseases of.)

EMPHYSEMA.—A disease of the *pleura*, attended with pus or matter in the pleural cavity over the lungs. For this condition, surgeons sometimes introduce the trocar and canules to draw off the fluid.

ENDOCARDITIS.—Inflammation of the lining membrane of the heart. (See Heart, Diseases of the.)

ENTERITIS.—Inflammation of the *small intestine*. (See Diarrhea.)

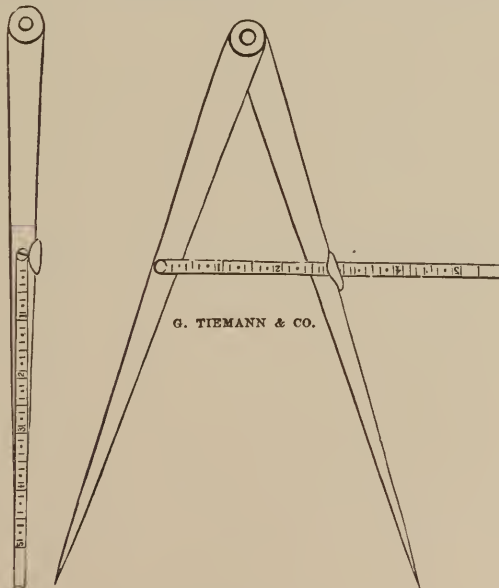
ENTOZOA.—Animal parasites that live *in* the human body. (See Worms.)

EPHEMERA. (See Milk Sickness.)

ESTHESIOMETER.

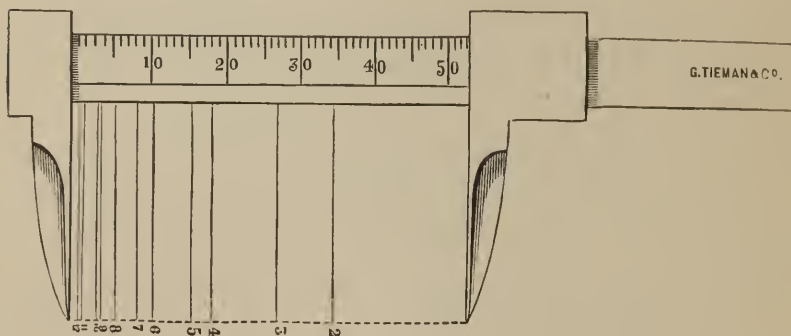
This is used to determine the sensibility of paralyzed parts.

The value of the esthesiometer depends on this fact, that the



consciousness of the distance between any two points applied to the skin varies in different parts of the body, and is modified by dis-

ease. The ordinary compass with a graduated scale is much used. By the esthesiometer we can also ascertain whether the paralytic is recovering, because usually the affected part, as it gets better, becomes more sensitive.



The ends of the fingers and tip of the tongue are the most sensitive portions of the body ; the least sensitive parts are the back and outer portion of the thigh. This sensitiveness is greatly modified by paralysis. (See cuts of Esthesiometer.)

EPILEPSY, OR FALLING SICKNESS.

Symptoms.—In the great majority of cases the fits of epilepsy come on without any previous indication of their approach ; but sometimes the following premonitory symptoms are experienced : Headache, giddiness, ringing in the ears, flushed face, low spirits, irritability of temper, the fancied appearance of certain objects before the eyes, and in some cases dilatation of the pupils, announce the approach of an attack. These sensations continue some time, perhaps a day or two, before the fit comes on ; but in other patients the warning symptoms are of short duration, and of a different description. A feeling of pain, heat, cold, or tingling comes on suddenly in one of the toes or fingers, or in a particular part of the back or belly, then rises gradually through the stomach and heart until it reach the head, when the patient immediately falls to the ground as if struck with lightning. But in ordinary cases, at the moment when the patient least expects it, perhaps when conversing with his friends at table, he utters a loud, unnatural scream, and falls down bereft of sense and voluntary motion, and violent convulsions instantly follow. In some cases, however, the convulsive movements precede the fall ; particular motions or gesticulations of the limbs take place, or the head is drawn backwards or turned

gradually round towards one of the shoulders, by a spasmodic action of the muscles of the neck, which appears very distressing ; but in general the piercing shriek, the fall, and the convulsive movements follow each other with the rapidity of lightning. The muscles of the trunk and extremities of the body are violently agitated, and the patient is severely shaken ; the limbs are alternately extended and flexed, the toes are curved inwards, the thumbs are firmly grasped in the palms of the hands, and it has been remarked that in many cases the muscles of one side of the body are more severely convulsed than those of the other. The convulsive action of the muscles of respiration causes the breathing to be at first slow and difficult, but after some time it becomes quick, irregular, and occasionally stertorous. The muscles of the belly and the bladder are acted on in a similar manner, so that in some patients the feces and urine are expelled involuntarily. The face is swollen and red or of a purple color ; the veins of the temples and neck are enlarged ; the face is drawn to the right or to the left, or the head may be drawn backwards or downwards on the chest. Sometimes the eyelids are closed, at other times wide open ; the eyes are fixed and staring, or they roll in their orbits, the pupils remaining dilated or contracted, but always immovable. The face is violently distorted, the patient gnashes his teeth and thrusts out his tongue, which is often severely injured ; foam flows from the mouth, and is not unfrequently bloody, from the wounds inflicted on the tongue. The action of the heart is strong, tumultuous, and irregular ; and the pulse is quick, small, and at times scarcely perceptible.

It seldom happens that the attack continues longer than a few minutes, but in some cases the patient becomes immovable for a short time, and is again suddenly convulsed. Sometimes a series of attacks and remissions follow each other in this manner during half an hour, an hour, or even considerably longer. In general, however, the convulsions gradually cease ; perspiration breaks out on the forehead, neck, and breast ; the breathing becomes natural, and is occasionally attended with sighing ; the face loses its livid color and appears pale. The patient now remains for some time in a sort of stupor, and is then restored to a slight degree of consciousness ; he appears very drowsy and overcome with fatigue, and soon falls into a deep sleep. While in this state the perspiration breaks out freely over the whole body, the breathing becomes natural, the pulse full, soft, and slow ; and after sleeping profoundly during several hours he awakes slowly, without retaining the slightest recollection of what has taken place. He may recover

his senses immediately on awaking, but in most cases the power of voluntary motion, sensation, and consciousness returns slowly, and a feeling of languor, weakness, and weight, or oppression in the head, with pain, or a sensation of soreness about the chest and limbs, is experienced for some time after.

When the fits recur frequently, and the complaint has been of long continuance, the memory fails, the intellect becomes impaired, the countenance assumes a vacant appearance peculiar to epileptic patients, and at last a state of idiocy is induced ; but when the attacks appear at long intervals, without being immoderately severe, their influence on the general health and intellect is scarcely if at all perceptible. In fact, when confined within due bounds, epilepsy is not incompatible with the development of the most powerful intellect. Many celebrated men of all ages, military, political, and literary, have been affected with this disease ; it is said that Julius Cæsar, Mahomet, Petrarch, Rousseau, and Bonaparte were epileptic.

Treatment.—Comparatively few cases of epilepsy permanently recover under any treatment. The disease is, however, very frequently the immediate cause of death. Patients may live for years in spite of violent and frequently repeated attacks. It is a bad sign to have many attacks at night.

During the attack very little is to be done.

Loosen the clothing of the patient. Place him in a comfortable position. Give him fresh air.

For treatment during the intervals, the profession have now settled down upon a very few remedies. The chief of these is *bromide of potassium*.

This may be given to epileptics in very large doses, and for a long time. Occasionally, though quite rarely, the bromide of potassium produces unpleasant effects when given in large doses. For this and for many other reasons, epileptic patients should always, if possible, put themselves under the care of a good physician, and take the remedies under his direction. The bromide of potassium is frequently combined with the bromide of ammonium. (See Bromide of Ammonium and Bromide of Potassium.) Twenty and thirty grains (1.5 to 2 grams) at a dose may be taken of bromide of potassium three times a day for several months.

The following prescription may be used by those who are beyond the reach of medical aid. It should not be taken for a long time without advice :

Bromide of potassium, 1 ounce (32 grams),
 Bromide of ammonium, $\frac{1}{2}$ ounce (16 grams),
 Iodide of potassium, $\frac{1}{4}$ ounce (8 grams),
 Tincture of gentian, 7 ounces (224 grams).

DOSE.—A teaspoonful. Before bedtime a double or treble dose may be given.

The following combination has been much used by Brown-Sequard and others :

Iodide of potassium, 1 drachm (4 grams),
 Bromide of potassium, 1 drachm (4 grams),
 Bromide of ammonium, $\frac{1}{2}$ drachm (2 grams),
 Bicarbonate of potash, 2 scruples (2.5 grams),
 Infusion of columbo, 6 ounces (192 grams).

DOSE.—A teaspoonful before meals, and three table-spoonfuls on retiring.

Oxide of zinc, in gradually increasing doses, has been much used.

The *zinc combination* (page 495) also is valuable.

Belladonna, in doses sufficient to keep the throat dry, has been used with advantage.

In those cases where the bromide of potassium does not succeed, it is well to try these others. When bromide of potassium produces, as it sometimes does, acne or eruptions on the face and body, it should be combined with five drops or less of Fowler's solution at each dose. When too long continued the bromide causes dulness and stupidity, and even the appearance of intoxication. It is unwise, however, to experiment much on one's self with these powerful remedies. They should usually be given under the care of a medical adviser.

Central galvanization is sometimes of service in epilepsy, and should be used, if possible, in connection with internal medication. (See Galvanization, Central.)

Under this galvanic treatment cases of epilepsy have been helped after the bromides in all their combinations have failed. Galvanism may be used in connection with the bromides.

Epileptic patients should carefully observe the laws of health in respect to diet, air, sunlight, bathing, sleep, and exercise, and should be very moderate in the indulgence of their passions.

Epilepsy is treated more successfully than formerly. By acting upon the principles above indicated, physicians are now able to

diminish the frequency of the attacks, to lengthen the intervals, and sometimes to cure entirely.

The treatment, to be successful, must *be very persevering*; and, as a rule, patients must be content if they only get permanent relief, and not absolute cure.

Physicians are yet in the dark about the nature of epilepsy; but in the treatment of the disease we have certainly made progress.

When the attacks are of frequent occurrence, the patient must be carefully watched, and a piece of india-rubber, or a wedge-shaped piece of soft wood, should be always ready to place between the teeth, in order to prevent him from biting his tongue. It is scarcely necessary to mention that he ought to avoid all dangerous situations, such as going near the edge of a precipice, sitting on the top of a coach, etc., and not walk near water, nor sit near the fire, unless it be completely protected by a strong wire fire-screen. And indulgence in venereal pleasures might prove fatal to an epileptic person.

EPITHELIOMIA. (See Smokers' Cancer; also Cancer.)

ERUPTIVE FEVERS.

Eruptive Fevers are characterized by the general febrile symptoms, more or less severe, followed by an eruption sufficiently distinctive in each case to determine the name of the disease. As a rule, these only occur once in the life of an individual: particulars of them will be found under the several heads of *Small-pox*, *Chicken-pox*, *Measles*, and *Scarlatina*.

ERYSIPELAS, ROSE, OR ST. ANTHONY'S FIRE.

Erysipelas is a peculiar inflammation of the skin, attended with fever, and frequently accompanied by elevations of the scarf-skin resembling blisters. Sometimes it is a mild disorder, confined to a small portion of the skin (*simple erysipelas*); sometimes the inflammation extends deeper than the skin (*phlegmonous erysipelas*). It usually attacks the face, beginning often near the bridge of the nose or beneath the eye. It may extend upon the scalp and be attended with very great danger to life. (See Plate X.)

Causes.—Erysipelas is sometimes an epidemic malady, and prevails extensively in hospitals or crowded establishments. It frequently depends on some derangement of the digestive organs, a

circumstance which is explained by the well-known sympathy between the skin and mucous-lining membrane of the stomach and bowels ; in other cases it is manifestly excited by some wound or injury of the skin. Finally, erysipelas prevails during the spring and autumn, and under certain conditions of the atmosphere which favor its production.

Symptoms.—*Simple erysipelas* is generally ushered in by febrile symptoms, such as shivering, headache, hot skin, quick pulse, sickness at stomach, or vomiting ; pains about the loins, and lassitude ; but many of these symptoms are absent when the disease is to be very mild in its nature. In the part which is about to be attacked, the patient often experiences a feeling of heat, itching, or weight. On the second or third day the inflammation makes its appearance, and is attended with the ordinary signs—viz., redness, heat, pain, and a certain degree of swelling. The color of the inflamed part is commonly deep rose, of a shining aspect, and soon spreads uniformly over the surface ; it disappears under pressure made by the finger, and immediately returns again when the pressure is removed. The pain is of a pungent, burning kind, and is often attended with itching or a pricking sensation ; it extends all over the inflamed surface ; the swelling is not considerable, unless the disease be very severe ; it is uniformly spread over the inflamed part, and is more easily detected by the finger than by the eye. (Plate X., A.) About the third or fourth day blisters of various sizes sometimes appear on the inflamed skin (Plate X., B), but in other cases the inflammatory symptoms begin to subside on the fourth and fifth days, and soon terminate, without any accident, in a separation of the scarf-skin or cuticle from the true skin underneath.

Phlegmonous erysipelas is a more severe form of the complaint, which attacks the structures underneath the skin as well as the skin itself. It generally occurs in young, strong persons, and affects the limbs more frequently than any other part of the body. In phlegmonous erysipelas the fever is much more violent, and the pain more severe than in the former species ; the swelling of the inflamed parts is more manifest, harder, and does not gradually disappear in the surrounding skin, but has more the feel of a tumor. When the disease has continued for four or five days, it may subside and disappear, as in cases of *simple erysipelas* ; but it more frequently happens that, while the fever diminishes with the local pain and redness, the swelling of the part does not diminish in proportion ; it becomes soft, continues to retain the impression of the finger, and in a few days matter is formed between the muscles

and underneath the skin. In still more severe cases the matter extends along the cellular tissue, in the direction of the muscles, and destroys the adjacent parts, which are discharged in dirty-looking shreds of mortified substance mixed with pus; and this discharge may continue for weeks, until it completely exhausts the patient.

Simple erysipelas usually terminates on the third or fourth day; when blisters form it may continue for eight, ten, or even fifteen days; and in cases of a severe kind, where matter forms or the parts become mortified, the disease may last for several months. Erysipelas is commonly a mild disease, and terminates without any accident; but when attended by copious discharge of matter, or mortification of the cellular substance, it often ends in death. There is also much danger to be apprehended when it suddenly leaves any part (as the face, scalp, etc.) to attack the brain; or when it occurs in old persons of broken-down constitution, inebriates, etc., or after severe injuries.

Treatment.—1. *Relief of pain.*—This is accomplished by tepid fomentations—cloths wrung in tepid water and applied to the affected part. The common lead and opium wash is one of the best remedies to apply. It is very safe for those who are beyond the call of a physician. Besides this, ointment of oxide of zinc, or flour, may be spread over the affected part.

2. *To sustain the general system.*—Muriated tincture of iron, in large doses (half a teaspoonful), quinine, strychnine, may be used internally, with nourishing but easily digested food, such as beef-tea.

In the severer or “phlegmonous” forms it is sometimes necessary to make incisions and let out the pus.

EXOPHTHALMIC GOITRE, OR GRAVES’ DISEASE.

A disease that is characterized by the conjunction of these three symptoms:

1. Bulging out of the eyes.
2. Goitre, or bronchocele.
3. Palpitation of the heart.

It is quite distinct from ordinary goitre. It is a nervous disease, probably depending on the sympathetic nerve and nervous system. It occurs more in women than in men, and in the young more than in the old.

Treatment.—The treatment is galvanization of the neck and spine (see Central Galvanization), and internally *phosphorus*, *iodide of potassium*, and *digitalis*. Cases sometimes recover.

Plate E.



PERUVIAN BARK.—*Cinchona*.



ELECAMPAINE.—*Inula Helenium*.



HOPS.—*Humulus Lupulus*.



LIQUORICE.—*Glycyrrhiza*.



FOXGLOVE.—*Digitalis*.



HOREHOUND.—*Marrubium Vulgaris*.

EYE, DISEASES OF THE.

The eye is subject to a great variety of affections, and several forms of inflammatory disease ; it will, however, be necessary for us to mention only the most common disorders.

EYE, INFLAMMATIONS AND DISEASES OF.

These are acute and chronic inflammation of the outside of the eye, inflammation of the tear-passages, inflammation of the iris, and inflammation of the retina and nerve.

The affection known as cataract should also be named, and glaucoma. (For method of examining the eye employed by physicians, see Ophthalmoscope.) *Acute inflammation of the membrane* covering the lids and front of the eye—the conjunctiva—may be usually known by the following symptoms :

Symptoms.—The lids are more or less swollen, according to the severity of the attack. The eyelashes adhere together, and mucus or pus, or both, exudes from between the lids. The lids are also hot and red. The eye is painful, and there is a sensation as if sand or particles of dust were in the eye. There is not apt to be any fever or disturbance of the general system. There is a very great difference in different cases in the severity of these inflammations. In some the heat, redness, and swelling of the lids are very great. The lids cannot be raised at all, and the matter is constantly flowing over the cheeks. In others the lids are very little swelled, and only a half-watery fluid exudes very slowly and in small quantities. The lids are glued together in all the cases, and there is the sensation of sand in the eye. The mild form of the disease is called catarrhal conjunctivitis ; the severer, purulent conjunctivitis. The causes of the former are exposure to cold and dust, long-continued straining of the eyes, and so on.

Causes.—The causes of the latter are the inoculation of the pus with matter from some source, sometimes with matter from the urethra, which is affected with gonorrhea. Sometimes the use of improper means of treatment or undue exposure in the course of the catarrhal or simple variety of the disease will cause it to run into the purulent variety.

Treatment.—The treatment of the simple variety consists essentially in the use of cold water until the heat is subdued ; then of an astringent, such as alun or sulphate of zinc, with an ointment to be rubbed in between the edges of the lids at bedtime.

The alun may be used in the proportion of one drachm (4 grams) to the pint of water ; sulphate of zinc, two grains (.12

gram) to the ounce (32 grams); simple cerate or sweet-oil may be rubbed between the lids at night. Poultices should never be used, no matter how made, of tea-leaves, oysters, bread-and-milk, and the like. They have destroyed thousands of eyes.

Purulent inflammation of the mucous membrane of the eye, or purulent conjunctivitis, is a very dangerous disease to the eye. It occurs very often in infants, and is then called ophthalmia of the newly born. It is the same affection as that which we have described above, and is to be treated in the same general way. The dangers to the eye are from ulceration of the transparent part of the eye, or of spots or opacities forming on it. Irreparable loss of vision from want of care in cleansing the eyes sometimes occurs in forty-eight hours.

Treatment.—*Perfect cleanliness of the eyes*, whether they be those of an adult or of an infant, is the first and chief matter. This may be secured by means of bits of soft cloth dipped in lukewarm water, or by a small sponge. Alum-wash, a drachm (\pm grams) to the pint (512 grams), may be allowed to run through the eye four or six times a day. Ice-water should be applied over the lids during the early stages of the disease, taking care never to allow the applications to become hot. The coldness of the water should be moderated as soon as the lessening of the swelling of the lids and the subsidence of the discharge show that the force of the inflammation has abated. Simple cerate should be smeared between the lids at night. Morphine or opium may be given *to adults only*, to quiet severe pain. The patient should remain in bed, in a half-darkened room. Great care should be taken that none of the matter from the diseased eye enters into the eyes of any of the attendants.

The chronic inflammations of the outside of the eyes, or chronic conjunctivitis, are characterized by the following symptoms: Redness of the edges of the lids, thickening of the lids, and ghueing of the edges in the morning.

Treatment.—Mild astringents, eyewashes made of alum or sulphate of zinc, tannic acid, with an ointment, are the best means of treatment. All these astringents may be used in solutions of about two grains (.12 gram) to the ounce (32 grams) of water. Tannin should be mixed with glycerine. The general health should always be attended to by fresh air, exercise, bathing, and so forth.

Blue glasses to protect the eye from excessive light may be worn in all the chronic inflammations of the eyes, or a blue cloth or paper shade shaped like a cap-front.

Pustular conjunctivitis.—Children and even adults are very liable to an affection of the eyes which was formerly known as scrofulous ophthalmia, but since it arises where there is no scrofula in the system is better known as pustular ophthalmia, or pustular conjunctivitis. The chief symptoms are dread of the light; the child will bury its head in the pillow or in its mother's lap, and the adult who sometimes has the same disease can scarcely be induced to hold his head up and his eyes open even for a moment. There is also a great deal of watering of the eyes. On close observation, pustules or red points may be seen on the white coat or on the transparent part of the eye, or on both.

The patients with this affection are usually improperly or half fed. They need good food, such as beef and mutton, milk, eggs, and the like, with fresh air, frequent bathing, and exercise. Abstinence from tea and coffee, pastry and confectionery, is to be especially enjoined. The eyes themselves need very little attention beyond bathing with lukewarm water. A belladonna wash—aqueous extract of belladonna, two drachms (8 grams); water, four to eight ounces (128 to 256 grams)—may be applied to them twice a day.

Inflammation of the iris, or iritis, is usually characterized by great pain in the eyeball and in one side of the head, and by fear of light, so that the patient attempts to keep his eye closed. It is a very dangerous affection to the sight. It depends chiefly on the poisoning of the blood by syphilis or rheumatism. The chief local remedy is sulphate of atropia, of the strength of one to three grains (.06 to .18 gram) to the ounce (32 grams) of water, one drop of which should be placed in the eye by means of a camel's-hair brush or the like, once to four times a day. The syphilis or rheumatism, if manifesting itself in the other parts of the body, is also to be treated.

Inflammation of the tear-passages may be recognized by the running of the tears over the cheeks, and usually by a little tumor or swelling in the inner corner of the eye. Sometimes an abscess forms here. A surgeon will treat such a case by slitting up the canal leading along the edge of the lid to the corner of the eye, and then by probing the passage into the nose.

Cataract is an opacity of the lens of the eye, and is only to be cured by the removal of the lens from the eye. The operation of removing the lens of the eye is one of the most delicate and difficult in surgery. None but a person who has paid especial attention to diseases of the eye and their treatment should ever operate

for cataract. An opacity of the outside of the eye is not a cataract.

Cataract may be caused by an injury to the inside of the eye. A needle or any sharp substance passed into the lens will cause it to become cataractous.

Children are sometimes born with cataract. The disease is more common in old persons, however. The causes of opacity of the lens in old people are not very well known. About 80 per cent of those operated upon by extraction of the lens for cataract, by good surgeons, recover their sight. Patients who have been operated upon by removal of the lens are obliged to wear cataract glasses, or double convex lenses, to replace the lens that has been taken from the eye.

Glaucoma.—This is a painful affection of the eye, that is very dangerous to sight, and which is often mistaken for neuralgia of the head, because it is often accompanied by very severe pain in the temples and face. It is sometimes mistaken for cataract, because the lens becomes opaque as a result of the disease. In true cataract there is no pain.

Glaucoma can only be certainly recognized and treated by a surgeon. The prominent symptoms are pain in the ball of the eye and in the head, and rapidly increasing loss of sight. The eyeball becomes as hard as wood when the disease is far advanced, and the lens becomes of a greenish color ; hence the name given the disease by the ancients : *Glaucoma*—literally, *green tumor*.

The only proper treatment for glaucoma is an operation, first performed for this disease by Professor Graefe, of Berlin. This operation consists in cutting out a piece of the *iris*.

MUSCULAR AFFECTIONS OF THE EYES.

The muscles of the eyeball often become weakened from excessive use on near objects, and the pain and discomfort are so great as to cause the patients to believe that they have some dangerous disease of the inner part of the eye. The eyes water, become red, and the sight blurs on every attempt to use the eyes in reading, writing, or sewing.

Such a weakness of the muscles may depend on over-use of the eye, or on faulty conformation at birth. Rest will cure the one, while appropriate spectacles are required for the other.

There are three great classes of eyes requiring spectacles :

1. Eyes that are too long (short-sighted or myopic eyes).
2. Eyes that are too short (hypermetropic eyes).

3. Eyes whose muscular power has become weakened by old age (presbyopic eyes).

1. Myopia is largely increasing in this country. It is due to excessive use of the eyes, by a bad or insufficient light, or by working with the eyes when the head is too much bent over. Besides it is sometimes congenital—that is, children are born with eyeballs that are too long. Inasmuch as when myopia is of a high degree it is a very serious disease, *involving* the eye in great danger, care should be taken when it has once occurred that it be not increased by an improper position of the head, use of poor light, insufficient exercise in seeing at a distance, and so forth. Concave spectacles should be worn by myopic people, in looking at all objects more than a foot or two away from their eyes. The use of glasses in appropriate cases strengthens rather than weakens the sight.

2. Eyes that are too short are so from a want of perfect development; convex glasses are needed in such cases. Very many young persons require such glasses. Many cases that were once supposed to be diseases of the optic nerve and retina are now known to be merely cases of imperfect development of the eyeball, and only require glasses for their relief.

3. After the age of forty-five has been reached, all persons except those who are short-sighted begin to require glasses for reading. The muscle that adapts the eye to vision at different distances becomes weakened and the lens becomes rigid, so that the eye cannot be focussed for small type near the eye. Convex glasses remedy this defect. Short-sighted or myopic persons have eyes that are already too long; hence this failure in the muscle and rigidity in the lens are compensated for, and such persons do not require glasses for reading as soon as other persons, and sometimes they never require them. It is better to wear glasses so soon as they are required, to see distinctly and easily.

ASTIGMATISM.

This is a peculiar defect in certain eyes, which renders them unable to see vertical and horizontal lines with equal distinctness, and hence causes a blurring in vision. It is caused by too great an elongation or shortening of the eye in one or more meridians. It is relieved by peculiar glasses ground from a cylinder, instead of from a sphere, as convex and concave glasses are ground. It is usually a congenital defect, but it may be caused by diseases of the cornea and lens of the eye occurring after birth.

CROSS-EYES (SQUINT, STRABISMUS).

Deviation of one eye from the object looked at, so that it turns in or out, or above or below, is commonly known as "cross-eye" or "squint." The squint that is most common is that which causes the eyes to turn inward towards the nose. These defects are remedied by a surgical operation and the subsequent use of glasses, for such eyes usually require glasses, to prevent a return of the squint. The affected muscle is divided in the operation, and it becomes attached to the ball further back than it originally was, and hence it weakened.

DISEASES OF THE OPTIC NERVE AND RETINA.

These can only be certainly recognized by the use of the ophthalmoscope. They are caused by syphilis, the excessive use of tobacco and alcohol, injuries to the head, diseases of the brain, and diseases of the kidney. There are also congenital cases of disease of the nerve and retina.

A FEW SIMPLE RULES FOR THE CARE OF THE EYES.

1. Cold water is about the safest application for an inflamed eye.
2. Poultices are never to be used.
3. No one should read or sew, or use the eyes for any work on objects close at hand, *before breakfast or immediately after a full meal.*
4. *Bad air and bad food* make many diseased eyes; therefore avoid unventilated rooms, and sloppy, unnutritious food.
5. Nearly all persons should *use glasses* to read with as soon as they begin to hold a book more than *eight inches from the eye.*
6. Short-sighted persons should use glasses for seeing objects at a distance.
7. *Glasses properly chosen save sight, and do not injure it.*
8. Always hold a book so that the light will strike it *over the shoulders* of the reader—that is, from behind.
9. Do not use home prescriptions or quack ointments and eye-washes for diseased eyes, but consult a surgeon as soon as possible.

INJURIES TO THE EYE.

If a bit of steel or any other substance has entered the eye, it should be removed by competent hands as soon as possible. If it be left in the eye, not only the sight of the affected eye but of its fellow will be lost, by what is known as sympathetic inflammation

of the eye. Other injuries, where no substance has entered the eye, are treated in a manner similar to that advised for inflammation of the outside of the eye—that is, by the use of cold water, and if necessary by the use of some eye-wash. The simpler the eye-drops the better. Those of alum or the sulphate of zinc, used in the proportion of one to three grains (.06 to .18 gram) to the ounce (32 grams) of rose or distilled water, are the best.

Concerning the use of the substances that compose eye-washes, Stellwag makes the following suggestive remarks :

“ The acetate of lead and corrosive chloride of mercury are least to be recommended on account of their great liability to decomposition. Sugar of lead is, besides, dangerous when there are ulcers on the cornea or conjunctiva, since it readily forms a deposit on their floor. This becomes encapsulated, and causes various evil results. Nitrate of silver and sesquichloride of iron cause stains in clothing which are not easily removed. Tincture of opium readily forms a sediment, and therefore acts unequally. The sulphates, especially the sulphate of zinc, should therefore have the preference in catarrhal inflammation, especially if the results of some recent experiments should be confirmed, according to which sulphate of zinc contracts the vessels more powerfully than any other agent except cold.”

There is little question that many injure themselves by recklessly abusing popular eye-washes, of the composition of which they know nothing. It is better to let the eyes alone than to tamper with them, when we do not know the real nature of the difficulty.

FACE-ACHE.—Abscess of the gums connected with decayed teeth, or it may be a simple neuralgia. (See Neuralgia ; also Teeth, Diseases of.)

FACIAL PARALYSIS.—Paralysis of the muscles of one side of the face. It may result either from taking cold—the most common cause—or from some disease of the brain. When it comes from taking cold it is generally curable in a few weeks under *electrical* and other treatment. (See Paralysis.)

FAINTING—SWOONING—(*Syncope*).

Symptoms.—Fainting is for the most part a symptom of some other affection, rather than a disease in itself. It often accompanies disease of the heart, and may be brought on by any very painful disorder ; by loss of blood, excessive discharges or evacuations ;

debility, however induced ; and by sudden and violent mental emotions. Females and delicate people are most subject to fainting ; in the former it is often brought on by wearing stays too tightly laced, and by sitting with the back to the fire during meals. Some people, from peculiarity of habit, swoon on seeing blood or any disagreeable object ; in others the same effect is produced by pungent or disgusting smells.

Fainting, in connection with hysterical affections, is never attended with danger ; but when it arises from obstruction in the heart or great blood-vessels, at the commencement or during the course of fevers, or from extreme debility, it is to be viewed in a more serious light, and its source should be ascertained. This affection, in fact, is only to be dreaded when the cause which gives rise to it is of a dangerous nature. A common fainting fit is usually of very little consequence, and often occurs in people otherwise in good health.

Treatment.—Nature alone, in ordinary cases, is able to effect restoration in a few minutes, if the patient be placed in the horizontal position, which is the first thing to be done to arrest the fit. Removing the patient to a cooler apartment, or exposing him to a current of cold air, sprinkling cold water on the face and hands, rubbing the left side of the chest with *eau de cologne* or any other stimulating fluid, and applying *hartshorn* or *aromatic vinegar* to the nostrils, are the simple means usually resorted to for the purpose of rousing the individual. Internally, a little brandy and water, or a teaspoonful of *ether*, may be given as soon as he is able to swallow.

In severe and protracted fainting-fits, consequent on flooding after delivery, it becomes absolutely necessary to administer brandy or wine, and laudanum, in small and frequently repeated doses, in order to restore animation and prevent the recurrence of the fits. Fainting, in such cases, is not unattended with danger, and the frequent renewal of the fits might soon prove fatal ; the dread, therefore, of increasing the flooding by the stimulating action of these remedies on the system ought not to prevent their use, since it is obvious that to prevent the patient sinking from exhaustion, her strength should be supported at all hazards.

FALLING OF THE WOMB. (See Women, Diseases of.)

FAT, HOW TO BECOME.—In order to become fat observe these three rules :

1. Eat those articles of food that contain much starch and sugar and fat, as potatoes, milk, and sweet fruits.

Plate F.



BALM MINT. - *Melissa Officinalis*.



CENTAURY. - *Sabbatia Angularis*.



SAGE. - *Salvia Officinalis*.



CAMOMILE. - *Anthemis*.



CUBEBS. - *Piper Cubeba*.



ALOE. - *Aloe Spicata*.

2. Abstain from those articles of food that severely injure the digestion.

3. Take it as easily as possible ; work without worrying.

FATTY DEGENERATION.—A form of degeneration that is found in the *liver*, *arteries*, and *kidneys*. It always causes grave diseases.

FATTY HEART.—A fatty degeneration of the muscular walls of the heart. It is a disease of middle life or old age. (See Heart, Diseases of.)

FAVUS. (See Scald Head and Ringworm.)

FECAL VOMITING.—Vomiting of the feces occurs in *obstruction* of the bowels. It is a serious symptom. It may occur in hernia. (See Hernia, or Rupture.)

FISTULA.

A fistula is a narrow, open abscess. A very common form is the *fistula in ano*, penetrating the cellular substance about the anus or into the rectum. Fistulas are to be treated by pressure, caustics, stimulating injections, etc. It is frequently necessary to resort to a surgical operation. Fistulas are sometimes treated by injections of iodine in the form of *saturated ethereal solution*.

FEVER.

The characteristic marks of fever are an increase of heat, an accelerated pulse, a foul tongue ; often cold chills and shivering, headache, sore throat, great thirst, and an impaired state of the functions generally.

Causes.—The causes are various. Among them may be named exposure to cold, heat, or wet, fatigue, long-continued watching or mental anxiety, intemperance, unwholesome or insufficient food, breathing impure air, and all the bad local influences to which the lower classes, especially of large cities, are too often exposed, and the excesses and irregularities to which these classes are addicted.

Under this head may be mentioned : *bilious, congestive, eruptive, fever and ague, gastric, hay, hectic, inflammatory, intermittent, lung, malarial, milk, nervous, puerperal, remittent, rheumatic, scarlet, ship, spotted, typhoid, typhus, worm, and yellow fevers*. (See Index for respective articles.)

FLAT-FOOT.—A condition where the toes are turned out, the arch of the foot destroyed. (See Club-Foot.)

FLATULENCY.—Gas in the stomach or bowels. (See Dyspepsia.)

FLOODING--HEMORRHAGE FROM THE WOMB.

By flooding we understand those sudden copious discharges of blood from the womb which take place soon after the birth of the child. Flooding may occur under two different circumstances, which it is of importance to distinguish; either the after-birth (*placenta*) remains in the womb and is the cause of the bleeding, or the after-birth has been expelled, and the flooding depends on want of proper contraction in the womb, to close up the open mouths of its vessels.

In the first case—that is, when the after-birth remains in the womb—we can only stop the bleeding by removing the after-birth. This operation, however, must not be attempted without due consideration. When the woman has been reduced by the loss of blood to a very dangerous state, shown by the constant fainting, absence of the pulse, and coldness of the skin, it would be improper to remove the clots of blood in the genital parts, or disturb the patient in any way, lest the bleeding return and quench the feeble spark of life which remains. But when the patient has rallied under the use of small quantities of brandy and other cordials, or when the flooding has not been extremely copious, then an effort may be made to remove the after-birth. This is to be done by *very gently* pulling the navel-string, or by rubbing the lower part of the belly with the hand; by pouring cold water on the belly, and by giving the *ergot of rye*; three or four teaspoonfuls of the tincture, or half a drachm of the powdered ergot, may be administered every twenty minutes, during *one* hour, until the desired effect is produced. Should these remedies fail, a silk pocket-handkerchief should be passed into the vagina, and gradually pushed up against the womb, until the genital parts are completely filled; this done, medical assistance must be immediately sought, for the only way of stopping the bleeding effectually is to pass the hand into the womb and bring away the after-birth.

Flooding may occur, however, even when the after-birth has been entirely expelled. Here we must endeavor to make the womb contract by rubbing the lower part of the belly smartly with the hand; by applying very cold cloths over the same part; or by placing a firm pad over the womb, and then binding it around the

body with a linen or flannel bandage, as tightly as the woman can bear it with comfort. The *ergot of rye* must be given at the same time in the doses which we have just mentioned.

In some cases the flooding is internal—that is, the blood continues to be discharged into the hollow of the womb, where it collects in large quantities, and does not find its way out through the genital parts. This is a very dangerous form of flooding, because, as there is no external appearance of blood, it might easily be supposed that the woman was not suffering from the disease. The existence of internal flooding may be suspected when the womb can be distinctly felt rising for some height at the bottom of the belly; and when at the same time the patient complains of ringing in the ears, giddiness, and an inclination to vomit. If the face now become suddenly pale, the pulse sink, the skin become cold, and the woman frequently faint, no time is to be lost; the means before described are to be employed, and, should they fail, the hand must be passed up into the womb, in order to remove the clots of blood and excite the womb to contract upon it.

Treatment.—As a general precaution during the treatment of flooding, we should mention that the patient must be kept perfectly quiet, in a cool room, and that she should never be suddenly raised from the lying posture, or be permitted to make any bodily exertion whatever.

The management of the patient, after flooding has ceased, requires very great care and caution. When the loss of blood has been excessive, the woman is reduced to the lowest state; complains of a constant feeling of sinking, and is extremely restless and depressed in spirits. Notwithstanding her desire to change posture, she must be kept at rest; forty drops (1.5 grams) of *laudanum* or two (.12 gram) grains of *opium* are to be given, and, if necessary, repeated in the course of an hour. When a little sleep has been thus procured, some light nourishment may be allowed, such as beef-tea or jelly, given in small quantities and frequently repeated; and when the stomach begins to recover itself the diet may be cautiously improved.

Diarrhea, or looseness of bowels, may be checked by the *chalk mixture, with opium*, or any other mild astringent.

One of the most frequent and distressing effects of severe flooding is *headache*, which often lasts for several weeks, in spite of our efforts to relieve it. The headache in this instance depends upon loss of blood, and the patient should be nourished as rapidly as possible.

FORMICATION.—A feeling as though ants were creeping on or just beneath the skin. This feeling is noticed in neurasthenia and in paralysis. It is not always a serious symptom. (See Neurasthenia.)

FRECKLES. (See Skin, Diseases of.)

FROST-BITE—FROZEN LIMBS. (See Chilblains.)

GALL-STONES—(*Biliary Calculi*).

Gall-stones form in the gall-bladder. In their passage through the common duct to the intestine they give rise to great pain. The paroxysm of pain which they cause may be confounded with colic, inflammation of bowels, and neuralgia of stomach. There is great pain, vomiting, tenderness over left side, yellowness of the skin and eyes, and sudden relief of pain. They have very nearly the same symptoms as neuralgia of the stomach, which is called **GASTRALGIA**. Ordinary *colic* has some of the same symptoms.

The pain of the paroxysms may be relieved by the use of opium, hypodermic injections of morphine (see Hypodermic Injections), and hot fomentations.

It is said that patients have been cured of gall-stones by taking daily large doses of *olive-oil*.

Other good methods of treatment are the following :

Muriate of ammonia, in large doses, 10 to 20 grains (.60 to .120 gram), in water.

To dissolve the calculus use the following :

Chloroform, $\frac{1}{2}$ ounce (16 grams),
 Ether, $\frac{1}{2}$ ounce (16 grams),
 Oil of turpentine, 1 ounce (32 grams),
 White sugar, 2 drachms (8 grams),
 Mucilage, 2 ounces (32 grams).

DOSE.—A teaspoonful three times daily.

Phosphate of soda, in doses of from 20 to 60 grains (1.25 to 4 grams). This treatment must be kept up for a long time.

Saline mineral waters, used freely.

Carbonate of soda, in doses of from 1 to 2 drachms (4 to 8 grams), in large quantities of warm water, is also used as a solvent.

GALVANIZATION—CENTRAL GALVANIZATION—
LOCAL GALVANIZATION.

There are two kinds of current used in *electrization*—the *galvanic* and the *faradaic*, respectively named from Galvani and Faraday. (See Electro-Therapeutics and Electrolysis.)

I have given the term *central galvanization* to a method of using the *galvanic* current in such a way as to bring the brain, the sympathetic nerve, the stomach, and the spine all under the direct influence of the current at a single application.

This method, like general faradization, is a powerful sedative and tonic, and is of value sometimes when general faradization disappoints us. It has been used with success by myself and others in *dyspepsia*, *gastralgia*, *cerebrasthenia* (exhaustion of the brain), *myelasthenia* (exhaustion of the spinal cord) (see Neurasthenia or Nervous Exhaustion), *epilepsy*, *chorea*, *hay fever*, *general neuralgia*, *sick headache*, and *paralysis* of various kinds.

Localized galvanization, introduced by Remak, is used mainly for local diseases.

GANGLION. (See Weeping Sinew.)

GASTRIC FEVER. (See Typhoid Fever.)

GASTRALGIA.

Neuralgia of the stomach. (See Neuralgia.)

The treatment is *central galvanization*, or the following :

Nitrate of silver, in doses of one third of a grain (.02 gram), three times a day.

Subnitrate of bismuth, in doses of five or ten grains (.31 to .62 gram).

GASTRIC ULCER. (See Ulcer of the Stomach.)

GASTRODYNIA.—Pain in the stomach from any cause, as *dyspepsia* or *neuralgia*. (See Dyspepsia and Neuralgia.)

GENERAL FARADIZATION.

This is a term which I have given to the application of *faradic* electricity all over the body. (See Electro-Therapeutics.)

General faradization is a sedative tonic, and is used for those cases and conditions of disease where sedative tonics are needed.

It is not a *specific* any more than quinine and strychnine and iron are specifics. Like quinine, trychnine, cold bathing, exercise, sunlight, and so forth, it is a tonic, and is to be used when tonics are needed, without regard to the *name* of the disease. It meets with its best success in *dyspepsia*, *neuralgia*, *St. Vitus's dance*, *hypochondriasis*, *hysteria*, *sleeplessness*, *nervous exhaustion* (*neurasthenia*), *some forms of paralysis*, *some diseases of women*, and *general debility*. It is also useful in *sub-acute rheumatism*. In *chronic rheumatism*, in *gout* and *rheumatic gout*, it does not usually accomplish what we wish, though it may afford much relief. For nervous dyspepsia and for neuralgia I know of no remedy that can be compared with general *faradization*.

It is needless to say that it meets with failures.

On the other hand, it must be allowed that it very often succeeds in cases of *dyspepsia*, *chorea*, *nervous exhaustion*, *neuralgia*, *hypochondria*, *hysteria*, etc., when other internal remedies have utterly failed.

In paralysis, neuralgia, and rheumatism, *general faradization* succeeds as well or better than the method of *localized faradization* that is used in Europe.

It possesses these *advantages over localized faradization* (see Electro-Therapeutics):

1. *In a large variety of diseases it is more efficacious.*
2. *It is more agreeable to the patient.*

The chief difficulty with this, as with all elaborate applications, is that it takes so much time, but this objection applies to many other valuable systems of medical treatment.

GIDDINESS. (See Vertigo.)

GLAUCOMA. (See Eye, Diseases of.)

GOITRE OF THE NECK. (See Bronchocele and Exophthalmic Goitre.)

GONORRHEA—CLAP.

Symptoms.—Gonorrhea consists in a discharge of yellow matter from the genital parts of the male or female, excited, in all cases, by the application of a contagious material from one individual to another. In males the discharge comes from the inside of the urethra or passage to the bladder; in females, from any part of the membrane which lines the genital parts. The infectious matter which excites gonorrhea is generally communicated during

unclean coition ; but it has been proved beyond all doubt that a discharge exactly similar to that of gonorrhea may, under certain circumstances, be produced by connection with a woman whose genital parts are perfectly sound. Gonorrhea may commence at any time after impure connection, but usually begins from the third to the seventh day, by an itching at the orifice of the urethra, which, if examined, appears to be unusually red and a little swollen. Soon afterwards a slight running takes place from the urethra, of a whitish fluid, and this gradually increases in quantity, while at the same time it becomes more thick, until at last thick yellow matter issues from the canal. The disease is now fully established, and gives rise to pain during the passage of the urine (*scalding*) ; sometimes this pain is extremely severe, but in other cases the patient scarcely feels any uneasiness of the kind during the whole course of the disease. In ordinary cases of gonorrhea the peculiar inflammation of the urethra, which constitutes the disease, does not extend up the passage beyond two inches from its orifice ; when the inflammation is acute or passes further up, the scalding is very severe, the under surface of the urinary passage becomes hard, feels like a cord, and is very painful to the touch ; the stream of urine is diminished from the swelling of the parts which surround the urinary passage, and blood is often discharged with the urine, from the bursting of small inflamed blood-vessels. The patient should not be alarmed at this mixture of blood in his urine, even when the quantity of blood is pretty considerable. When the inflammation or irritation extends from the urinary passage to the spongy substance which surrounds it, a very painful affection of the genital organ, called *chordee*, is excited ; and when the irritation reaches the bladder the patient cannot retain his urine for a moment, but is compelled to empty the bladder as soon as ever the desire to make water is felt ; if he attempt to keep in the urine, an intolerable pain is produced in the bladder and in the extremity of the genital organ, exactly similar to what happens during a fit of stone in the bladder.

Gonorrhea is often attended with two unpleasant consequences, which arise from the irritation extending to the glands in the groin, or to the testicles. In the first case a hard, painful swelling (*sympathetic bubo*) appears in one of the groins ; in the second case the inflammation extends along the seminal ducts down to the testicle, which become swollen and extremely painful to the touch (*swelled testicles*).

When a proper attention is not paid to cleanliness during the course of gonorrhea, or the extremity of the genital organ is

unusually irritable, the discharge of matter is apt to produce small sores on the end of the penis, and to cause inflammation of the foreskin. If this state be neglected, the foreskin sometimes swells to such a degree that it cannot be drawn back over the end of the penis, or, what is still more dangerous, when the foreskin has been drawn back it contracts like a tight cord round the end of the genital organ, cannot be pulled forward, and sometimes gives rise to mortification of the part.

Symptoms.—*In Women.*—We have as yet described gonorrhea only as it exists in men; when women are affected the disease is generally more mild, and not so apt to irritate the bladder or to produce swelling in the glands of the groin. The pain is commonly slight and soon disappears; the scalding also is more frequently absent altogether, and the running soon terminates in a discharge of matter which bears a close resemblance to the whites, or *fluor albus*. (See Leucorrhea.)

The time during which a gonorrhea lasts is extremely variable; if left to itself the inflammation usually subsides in four or five weeks, and turns into a chronic discharge (*gleet*) of slimy mucus from the urinary passage, without any pain, scalding, or unpleasant symptom; but it will always be prudent to endeavor to cut short the disease, not so much on account of any danger attending it as of the disagreeable consequences to which it often gives rise.

Treatment.—1. *Rest.*—Gonorrhea is a disease of inflammation, and needs quiet. In severe cases the patient should keep in a recumbent position. Simple and unstimulating diet.

2. *Demulcent drinks*, such as flaxseed tea or tea of marsh-mallow or *alkaline* drinks.

By these methods alone, well persevered in, severe cases of gonorrhea may be cured.

3. *Injections into the urethra.*

For this purpose various substances are used—sulphate of zinc, or sulphate of copper, or of nitrate of silver, *two or three grains* (.12 to .18 gram) *to the ounce* (32 grams) *of water*. I present below more specific suggestions on this too important subject. I may say, however, that any one who is so unfortunate as to contract this disease makes a serious mistake—indeed, commits a crime against himself—if he does not consult some good medical authority. The worst consequences may come from self-treatment. Patients are very apt to overdo the matter of injections, and thereby may bring on serious, and perhaps incurable diseases.

These same remarks will apply to syphilis and all other important maladies of the genital organs. Self-treatment for such affec-

tions especially is oftentimes worse than no treatment at all. It is better, however, to have *no treatment at all, or to doctor one's self, than to consult any one of the vast army of charlatans who advertise to cure these diseases*. Thousands have lost their health and their lives by intrusting to these abominable harpies the cure of their private diseases.

I am well aware that many, very many—especially seamen—are so situated that they cannot obtain medical advice of any kind when they contract these diseases, and for the benefit of such I give the treatment in detail.

But, after all, the best way to cure these diseases is to *prevent* them; the surest way to prevent them *is to abstain from impure intercourse*.

Fluid extract of *hydrastis* in teaspoonful doses is excellent for this disease.

When *copaiva* is employed, from twenty to thirty drops may be given three times a day, on a bit of sugar (see *Copaiva*); or in the following manner, as recommended by Sir A. Cooper:

Balsam of *copaiva*, 1 ounce (32 grams),
Mucilage of gumarabic, 1 ounce (32 grams),
Camphor mixture, 4 ounces (128 grams).

Dose.—A table-spoonful to be taken night and morning.

To conceal the unpleasant taste of the balsam, it may be rubbed up with magnesia into a kind of soap, and then made into pills; the dose then being from 12 to 20 grains (.72 to 1.25 grams).

The *copaiva* or *cubeb*s may be continued for eight or ten days, beyond which it would be useless to employ them if they do not produce any good effects. We must then have recourse to injections, which are to be thrown into the urinary passage by means of a small syringe. People have often a dislike to use injections lest the fluid pass up into the bladder. There is no fear that this will happen. The sides of the urinary passage lie in close contact with one another, and fluid cannot be driven into the bladder with the ordinary syringe; besides, we should remember that in no case is it necessary to push the injection with force; if it pass for a couple of inches into the urinary canal this will be sufficient. The following substances may be used for injections:

Sulphate of zinc, 6 grains (.36 gram),
Water, 4 ounces (128 grams).

Sulphate of copper (blue vitriol), 1 grain (.06 gram),
Rose-water, 2 ounces (64 grams).

Nitrate of silver, 5 grains (.30 gram).
Water, 1 ounce (32 grams).

The fluid is to be injected two or three times a day into the orifice of the urinary passage : one injection may be substituted for another, and the strength may be gradually increased by adding half a grain, or even a grain (.03 or .06 gram) of each substance to the water. As a general rule, it will be prudent not to commence injections before the disease has lasted for ten or twelve days ; but under urgent circumstances it may sometimes be cut short by injecting the *nitrate of silver* [10 grains (.625 gram) to the ounce (32 grams)] as soon as the pain and scalding are discovered.

We have now to describe the treatment applicable to the different accidents which may arise during the course of gonorrhea. Severe inflammation must be subdued by leeches, purgatives, and cold lotions. When the matter accumulates underneath the foreskin the parts should be washed two or three times a day in tepid water, and if there be any small sores about the root of the foreskin these should be dressed with a small quantity of *zinc ointment* on a piece of lint. If the bleeding from the urinary passage be copious, it may be arrested by ice-cold lotions to the genital organ, and cooling drinks. The *chordee* and painful erections which almost always attend severe gonorrhea may be relieved by the following draught, taken before going to bed :

Extract of hemlock, 5 grains (.30 gram),
Liquor of potash, 20 drops (.65 gram),
Camphor mixture, 4 ounces (128 grams).

The following is also to be recommended : *Bromide of camphor* in doses of three grains (.18 gram).

Or a pill, containing one grain and a half (.1 gram) of *opium* with five (.30 gram) of *camphor*, may be taken at bed-time, and repeated, if necessary, in the morning. It has also been found beneficial to rub the under surface of the genital organ with an ointment composed of equal parts of fresh *belladonna* leaves (powdered) and lard. When the effects of the *chordee* are long in going off we must rub in a small quantity of the *camphorated mercurial ointment* every night along the surface or sides of the genital organ. When the irritation extends to the bladder and gives rise to a frequent desire for making water, with pain, a draught containing six grains (.36 gram) of the extract of *hyoscyamus* or of *hemlock*, in four ounces (128 grams) of *camphor mixture*, must be taken at night ; or two grains (.12 gram) of *opium* may be

taken in a pill, and an ounce (32 grams) of *castor-oil* administered in the morning, to prevent costiveness. When the glands in the groin begin to swell and are painful, six to ten *leeches* should be applied to the painful part; the patient should endeavor to keep as quiet as possible, and should constantly apply cold *Goulard water* to the swelling, with lint covered by oiled silk. The extension of the inflammation to the testicles produces a very painful affection; the testicles swell, the skin which covers them becomes red, and a constant pain shoots from the testicles to the groin. This complaint may often be prevented by wearing a *suspensory* bandage to support the testicles from the commencement of the gonorrhea; but when it has seized on the part, we should at once apply ten to twenty *leeches* to the surface of the inflamed testicles, and repeat the leeches a second time if the pain continue unabated. The bowels must be freely acted on by cathartics. The testicles must be supported by a suspensory bandage or a silk handkerchief, and a lotion composed of *Goulard water*, or one ounce (32 grams) of spirits of wine in five ounces (160 grams) of water, should be constantly applied to the inflamed parts. Swelled testicles is now treated by strapping with adhesive plaster.

GLEET.

Symptoms.—When gonorrhea has continued for some time, and the pain has completely disappeared, the discharge gradually loses its yellow color, becomes greenish, and finally clear; the constant running of this clear discharge from the urinary passage is called a *gleet*; but any excess of diet, etc., is apt to bring back again the greenish or even yellowish running. Gleet is not attended with much personal inconvenience, and is often neglected on this account, and allowed to continue for many months or years. When it has lasted for a long time it is frequently difficult to cure it by any treatment which we may adopt.

Treatment.—Gleet is treated on two principles.

1. *Local applications* of fluids by injection, as described under treatment of gonorrhea; and *bougies* of various sizes passed up to the bladder, one, two, or three times a week. Sometimes these bougies are smeared with *calomel ointment* or *glycerine*, and are placed in very cold water or on ice before they are applied. The use of bougies may be alternated with the injections.

2. *General tonic treatment.*—Gleety patients are often debilitated. Quinine, muriated tincture of iron, and strychnine may be used, and nourishing food.

Recently the oil of erigeron (see *Erigeron*) has been used in-

ternally in gleet with success. It has some special influence on the inflamed urethra.

Surgeons in recent times often use not only gradual dilatation of the urethra in gleet, but also divide the stricture by means of cutting instruments devised for that purpose. There are those who claim that in all or nearly all cases of obstinate gleet there is stricture, which can be found by careful examination.

Many patients who have a slight gleety discharge from the urethra are much more annoyed by it than is necessary. They become blue and hypochondriacal. They imagine that great evil is to befall. They frequently suppose that the discharge is seminal fluid, and that they will soon become impotent. Even when the physician ascertains by microscopical examination that the discharge comes entirely from the urethra, still they refuse to be comforted. All this is extreme folly. One great advantage to patients in consulting some *honest* physician when they are afflicted with maladies of the genital organs is that they are immediately reassured and informed as to the real truth in these matters. (See Seminal Emissions.)

The teachings of quack doctors are chargeable with a vast amount of needless distress.

GOUT.

We shall make only two divisions of gout, the regular or *acute*, and the irregular or *chronic* gout.

REGULAR OR ACUTE GOUT.

Symptoms.—An attack of gout is invariably preceded by certain symptoms, which, though not observed in every case, always take place in a more or less marked manner. These premonitory symptoms vary greatly in different individuals, but are in all cases connected with a deranged state of the digestive organs; the tongue is foul, or much redder than natural; there is heartburn, sometimes belching of sour fluid, and perhaps vomiting; the patient feels sleepy and uncomfortable after eating, is frequently low-spirited, and sleeps badly. The feet are sometimes very cold, at other times distressingly hot; a pricking, darting, or numb sensation is felt occasionally in the legs and feet, particularly in the foot which is about to be attacked; and some hours previous to the paroxysm there are generally flushes of heat alternating with shivering. Indeed, a long train of warning symptoms might be easily enumerated, but they are all so irregular, and vary so much

in different individuals, that we see no necessity for noticing them further. It is worthy of remark, however, that every person subject to gout experiences some particular sensation or symptom which serves to announce the approach of an attack.

At length the first paroxysm declares itself, as in asthma, about two or three o'clock in the morning. The patient awakes suddenly, with a violent throbbing pain, generally at the ball of one of the great toes, though sometimes at the heel, instep, or ankle. The pain goes on increasing, accompanied with a sensation of burning heat, weight, and stiffness of the part, and severe shooting pains in the limb. This local suffering is at first attended with rigors or shivering, which is soon replaced by fever and great restlessness. In mild cases the pain after a few hours abates a little, and gentle perspiration breaks out; but in general it continues without any amelioration until about midnight, and then begins to diminish until towards two or three o'clock in the morning, when the patient falls asleep, after twenty-four hours' severe suffering. On awaking he finds the part very tender, red, shining, and swollen, with considerable distention of the veins of the foot. The following night the pain and fever are renewed, and again relieved in the morning; this goes on regularly during a longer or shorter period, each paroxysm being less severe than the preceding one, until at last the attack terminates entirely. The part remains swelled for some days afterwards, there is severe itching, and the skin falls off in scales; the patient then feels better in every respect than before the attack.

The first attacks of gout seldom continue beyond three or four days, and are confined to one foot; but when the disease has gone on for some time the inflammation, when declining in one foot, suddenly attacks the other, and frequently the fingers, wrists, or knees. Then the acute, gnawing pain, the shivering and subsequent fever, the swelling and redness of the part, and all the symptoms as above described, recommence. At the expiration of three or four days the pain is again relieved; but the attack does not end here. A similar fit supervenes, affecting the same or another joint, or perhaps several parts simultaneously, accompanied with the same series of symptoms and continuing during the same length of time. Hence, to complete an attack of gout three or four consecutive fits are required, each taking three, four, or five days to run its course. Fifteen days may be considered as the average duration of an attack of gout, but it frequently continues much longer.

The time which may elapse between the attacks is very uncer-

tain ; twelve months or even several years may intervene between the first and second attack, but the interval is often much shorter ; this depends in a great measure on the constitutional tendency and manner of living of the patient.

When the disease has been confirmed, the attacks occur more frequently, are more severe, continue longer, extend to several joints, and affect to a certain extent, in some individuals, almost every joint of the body, until at last the constitution gives way and the patient is rendered miserable.

One of the most constant phenomena connected with gout is the passing of high-colored urine during the attack, frequently containing particles of sand or gravel ; but when the feverish symptoms have abated the sediment acquires a white color, and resembles chalk or magnesia.

IRREGULAR OR CHRONIC GOUT.

Symptoms.—Chronic gout is generally the consequence of several attacks of the acute form, or it may appear as a primary affection. In both cases the difference which exists between it and acute gout consists in the pain being less severe, the feverish symptoms milder or entirely absent, and the attacks of much longer duration, continuing in some cases several months, in others all the year round, with the exception of two or three of the summer months. But in general, before gout becomes chronic, several of the joints have been affected ; from the feet it has passed to the ankles, fingers, wrists, knees, etc. In this state of the disease several joints are seized in succession during the same attack ; but when it wanders in this manner from one part to another it rarely happens that the pain keeps up its original intensity.

The pain in chronic gout is constant, but not nearly so severe as in the acute form. At times, however, it becomes considerably increased, particularly after meals, during the early part of the night, and when the patient changes the position of the affected parts ; it is also aggravated by changes of temperature and fits of anger. Under these or other circumstances the suffering occasionally becomes acute in the very extreme. Even persons otherwise robust, and possessed of the greatest fortitude, are driven almost to a state of madness by the violence of the pain. In such cases a fainting-fit is not an extraordinary occurrence.

After acute gout the joints soon resume their usual strength and freedom of motion, but in the chronic form they remain stiff, swollen, and not unfrequently deformed. In some cases, especially in those who have been long subject to gout, a substance resem-

bling soft mortar, or plaster-of-paris in a half liquid state, is deposited about the small joints ; and when this matter becomes hard it is commonly called *chalk-stone*. These chalky concretions may be formed immediately under the skin or within the joints. They are often the source of great pain, sometimes cause inflammation, and the formation of matter, along with which they are occasionally discharged. Chalk-stones were discovered by Dr. Wollaston to be composed of urate of soda.

One of the most remarkable and peculiar phenomena of gout is the facility with which it moves from one part to another. After attacking several of the joints in succession it may be suddenly transferred to the stomach, bowels, brain, heart, kidneys, or, in fact, to any internal organ or part. This is distinguished by the term *retrocedent gout*. If gout change its seat from a joint to the stomach or any other organ during an acute paroxysm, the internal affection will also be acute ; but if the gout be chronic the internal disorder will be less severe and longer continued. When gout is thus transferred, the stomach and bowels are the parts most frequently attacked—the former with pain, spasm, sickness, and vomiting ; the latter, either alone or in conjunction with the stomach, with violent colic or acute inflammation. Gouty people, however, are too apt to attribute every internal disorder, whether functional or inflammatory, to the influence of gout ; though it by no means follows that the numerous derangements to which they are subject are characteristic of this disease, merely because they coexist or follow it. In fact, the translation of gout from the joints to internal parts is not nearly of such frequent occurrence as is generally supposed ; and this ought always to be kept in recollection in order to avoid errors in treatment.

Causes.—That a predisposition to gout is transmitted from parents to their children is a fact not to be doubted ; and when hereditary disposition exists there is every reason to believe that the disease is more ready to declare itself than under other circumstances ; but the cases in which it occurs without the more powerful influence of intemperance and idleness are very rare indeed. Gouty people attribute the disease to this predisposition, as if it were the only cause ; but we know that there is nothing more natural than that the son should acquire the same indolent and luxurious habits as his gouty father, and that there is nothing more likely to happen than that the influence of those habits on the system, particularly when associated with hereditary disposition, should bring on the same disease. But if the son be placed in a different position in life, if from reverse of fortune he be compelled

to toil daily in order to gain a scanty maintenance, he may at least rest assured that, whatever misfortunes and sufferings he may have to labor under, gout is not likely to be one of the number.

The influence of age is more clearly shown than that of predisposition entailed on offspring. It was stated by Hippocrates, and has been remarked from his time downwards, that gout rarely if ever occurs before the age of puberty. The first attack may take place at any period of life from twenty-five to fifty; but when the predisposition is strong, and the habits of the individual intemperate, it may declare itself much earlier.

Women are most frequently attacked by gout after the entire cessation of the menstrual discharge; but at no period of life are they so subject to it as men. The late Professor Gregory stated the proportion as one to fifty in England, and one to a hundred in Scotland. This relative exemption is, no doubt, owing to their temperate habits, and the periodical discharges by which the system relieves itself.

One of the causes to which gout has been attributed by many authors, both ancient and modern, is over-indulgence in drinking wine; and there can be no doubt that this habit has a strong tendency to bring it on. Observation has also shown that the habitual use of claret, champagne, and port is more likely to produce this effect than indulgence in other wines, and malt liquor and cider more than spirits.

A patient of mine, who had suffered for many years from the so-called rheumatic gout once told me that whenever she took *one sip of champagne at a dinner, she felt it instantaneously in the affected joints.*

Treatment.—Acute gout is treated by *colchicum* or *meadow-saffron*. The wine of the root may be given in doses of from *ten to twenty-five drops*, three, four, or five times a day. *Colchicum* should not be given in very large doses. It may produce unpleasant and serious effects.

Local applications of alkaline washes (solutions of carbonate of potash) may be made to the affected joints, or of laudanum. The joint may be wrapped in oiled silk or *spongio-piline*. Cold applications should not be used, as they may drive the disease to some important organ.

When gout attacks the stomach the horrible pain may be relieved by *hypodermic injections* (see Hypodermic Injections), or by chloroform or laudanum, or by Hoffman's anodyne, or brandy, internally. Mustard-plasters may be placed on the pit of the stomach, and the feet may be bathed in mustard-water.

Muriatic acid in the following combination :

Muriatic acid, $1\frac{1}{2}$ drachms (6 grams),
 Chloroform, 2 drachms (8 grams),
 Tincture of colchicum, 1 drachm (4 grams),
 Infusion of cascarilla, 6 ounces (192 grams).

DOSE.—One or two table-spoonfuls every four hours.

A change of air, a trip over the ocean, will sometimes cure an attack of gout when other remedies have failed. Patients in the North might try a trip to the Southern States, or a residence in some tropical or sub-tropical climate.

Prevention of Gout.—The most important part of the preventive treatment is a proper regulation of the diet, which ought to consist of tender, well-boiled vegetables, stale bread, fruit, eggs, fish, and a moderate allowance of plainly dressed beef or mutton once a day. Rich and highly seasoned dishes, heavy puddings, pastry, salads, pickles, salmon, etc., are to be avoided. No general rule, however, can be laid down ; the particular articles of diet must vary in different individuals, and the quantity of food to be allowed must depend in a great measure on the extent of daily exercise made use of. A spare diet should be rigidly adhered to by full-blooded persons, who have a strong hereditary disposition to the disease ; but in general this is not necessary. The maxim should be, not to eat more meat or drink more wine than is really necessary ; to regulate the quantity and quality of food so as not to injure the health, always keeping in recollection that people in general, and gouty people particularly, eat more than is good for them—more, in fact, than is consistent with the due performance of all the functions of the body—that is to say, with perfect health.

The preventive agent ranking next in importance to a well-regulated diet is exercise. But exercise, in order to produce the desired effect, must be regular and sufficiently active. Walking is to be preferred, if the state of the feet will admit of it, otherwise active exercise on horseback should be employed. Much benefit may also be derived from friction of the limbs with rough towels or a flesh-brush night and morning. Flannel should be worn next the skin ; cold, wet, and sudden changes of temperature are to be avoided ; the feet must be carefully kept warm, particularly during the night ; and the patient should retire to rest at an early hour in order to insure early rising in the morning, than which there is nothing more conducive to health.

The principles already laid down show the necessity of guarding

against a change from a very active to a sedentary life, and from low to high living ; indeed, the reverse of these changes, if adopted suddenly, are not without risk. In fine, all the usual rules for the preservation of health ought to be particularly attended to by gouty people. Nearly all that can be said on the subject is comprehended in the old Scotch saying, that “any man might cure himself of gout by living on a sixpence a day, and working for it.”

(For Rheumatic Gout, see Rheumatism.)

GRANULAR DEGENERATION.

This term is applied to the appearance which some organs, as the liver or kidneys, assume when undergoing fibrous or fatty degeneration.

GRANULATIONS—PROUD FLESH.

Soft nodules of a red color that appear in ulcers. It is by their development that scarring ultimately takes place.

Granulations may become diseased so as not to heal readily. Granulations of this kind are called “proud flesh.” (See Proud Flesh, Ulcers, Wounds.)

GRAVES'S DISEASE. (See Exophthalmic Goitre.)

GREEN SICKNESS. (See Chlorosis and Menstruation.)

GRIPINGS. (See Colic.)

GROCER'S ITCH. (See Skin, Diseases of.)

GULLET, OBSTRUCTION OF.

Obstruction of the swallowing-tube, either through stricture or some foreign body. Poisonous acids may cause stricture through their local action on the parts. Surgeons overcome obstructions of this kind by passing with care an œsophagus tube or sound, and also by applying electricity (mild galvanic currents). “When a piece of food too large for the passage sticks fast in the gullet, and cannot be removed, death from suffocation will be likely to ensue. Sometimes the obstruction can be pushed down into the wider part of the passage by means of a finger passed into the opening of the gullet ; or, if it cannot, this may be accomplished by means of what is called a *probang*, which is a smooth, round piece of whale-

bone, about two feet long, and as thick as a wheaten straw, to the smallest end of which a piece of sponge about the size and shape of a marble is firmly attached. Something like this may be extemporized out of the rib of an umbrella, having a knob of some soft, yielding substance fastened to it. In using the instrument, care must be taken to have the patient's head thrown well back, and to let the chief pressure be upon the back of the throat; the instrument must be well oiled or greased in some way, and pushed steadily and quickly down until the obstruction is felt to give way. If this should be a fish-bone or other jagged object, which is likely to penetrate the membrane, and get firmly fixed, the removal is not so easily effected. A little dexterous management of the fingers will often do this, as it is seldom far in the passage. In all such cases a surgeon should be summoned without delay, for an operation may be necessary. If the obstruction remain long, and be of the nature last mentioned, it may cause inflammation and swelling of the part. If the obstruction be small, such as a pin or a single spine of fish-bone, some crumb of bread well masticated will probably carry it down."

GUM-BOIL.

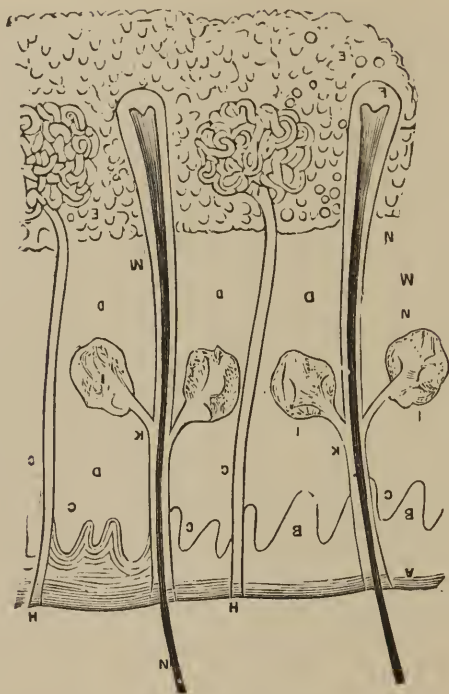
A gum-boil sometimes arises from exposure to cold, but is caused in the majority of cases by the irritation of a decayed tooth. Inflammation of the gum generally goes on to suppuration, to promote which warm fomentations and poultices are frequently applied externally, but they appear to be of very little service.

Treatment.—The treatment consists in cutting into the abscess as soon as there is reason to suppose that the smallest quantity of matter has formed. Afterwards the mouth may be washed occasionally with an astringent lotion composed of *tincture of galls* and water, or of twenty to twenty-five grains (1.25 to 1.56 grams) of *sulphate of zinc (white vitriol)*, dissolved in half a pint (256 grams) of *rose-water*. When the pain and inflammation have entirely subsided the decayed tooth should be extracted or filled by the dentist.

GUN-SHOT WOUNDS. (See Wounds.)

HAIR, STRUCTURE OF.

The following cut shows the appearance of a section of the skin under the microscope :



The *skin* in which the hair grows is composed of two parts, the *epidermis*, consisting of an outer, horny layer and an inner moist layer, and the *corium*, which is the leathery portion of the skin.

The skin is everywhere filled with pores. According to one of our highest authorities on this subject, there are seventy-three feet of *pores* in every square inch of skin. Through these pores the perspiration exudes.

From the same authority, as quoted by Beigel, we learn that :

“ On the pulps of the fingers, where the ridges of the sensitive layer of the true skin are somewhat finer than in the palm of the hand, the number of pores on a square inch a little exceeded that of the palm ; and on the heel, where the ridges are coarser, the number of pores on a square inch was 2268, and the length of tube 567 inches, or forty-seven feet. To obtain an estimate of the length of tube of the perspiratory system of the whole surface of the body, I think that 2800 might be taken as a fair average of the number of pores in the square inch, and 700, consequently, of the number of inches in length. Now the number of square inches of surface in a man of ordinary height and bulk is 2500 ; the number of



Fig. 1.



Fig. 2.



Fig. 3.



Fig. 4.

ABNORMAL CONDITIONS OF THE HAIR. Page —.

Fig. 1, Growth of Hair on the Body; Fig. 2, Growth of Hair on Face and Scalp; Fig. 3, Bearded Lady; from life photograph; beard began to grow at the age of 30; no cause; enjoys the best of health and the mother of two children since beard began to grow; Fig. 4, Baldness (Alopecia), from life photograph, age 34, furnished by Geo. H. Fox, M. D.

pores, therefore, seven millions, and the number of inches of perspiratory tube one million seven hundred and fifty thousand—that is, one hundred and forty-five thousand eight hundred and thirty three feet, or forty-eight thousand six hundred yards, or nearly twenty-eight miles.”

COLOR OF THE HAIR.

According to Beigel (previously quoted) the color of the hair depends on these three conditions :

1. *The color* of the cortical cells, which plays the most important part, and varies from very light yellow, through intense red and all shades of brown, to a deep, dark hue, as seen in the hair of the negro.

2. *The molecules, consisting of pigment*, diffused through the cells of the cortical substance. It is diminished in fair, and entirely absent in gray and white hair, in which the coloring matter of the cells may likewise have—though not necessarily—disappeared.

3. *The amount of air contained both in the air cavities and the medullary canal.*—It is only recently that the part of the air contained in hairs has been more carefully investigated and recognized.

HAIR AND SCALP, DISEASES OF. (See Plate 8.)

I cannot attempt to give any full description of diseases of the hair. I shall endeavor only to give a few suggestions for the guidance of those who are troubled with some of the more frequent affections of the hair, such as *dandruff*, *baldness*, and *premature grayness*.

Dandruff is one of the most common and most annoying of the affections of the scalp. There are very few who are not at times more or less troubled by it.

The best way to treat this disease is :

1. To keep the scalp clean by frequently washing it. We are too much afraid of having dry hair, because fashion requires us to keep our locks in certain positions.

The heads of infants and children should be kept carefully clean. There are many people who zealously wash every other part of the body, who perhaps take daily baths, and yet never wash their heads. Is it a wonder that the skin becomes diseased and the hair falls out? *Dandruff* is to the scalp what scurf skin is to the body generally.

2. *Use mildly stimulating washes.*

The following preparation I have found to be very serviceable :

Bay rum,
Glycerine,
Carbonate of ammonia,
Rose-water, of each four parts ;
Tincture of Spanish flies, one part.

Mix, and shake. Dilute with water as may be convenient, enough to cause only a very slight smarting sensation on the scalp, and thoroughly shampoo the head once or twice a week.

By the use of some such preparation as this the scalp may be kept quite clean and comfortable.

We should avoid using alkalies too freely on the scalp. A moderate amount of borax or ammonia is, however, beneficial, especially when combined with glycerine. Sometimes the above preparation ultimately makes the hair moist, by stimulating the secretion of lubricating oil. The temporary effect is always to remove the oil on the hair. The permanent effect is to restore the healthy action of the scalp.

BALDNESS—*Alopecia.*

This is sometimes congenital. It is certainly very often hereditary. It is not a sign of general debility in all, or even in the majority of cases. Some families who are quite weakly do not become bald until very advanced ages ; in other families who are very strong the head becomes bald between thirty and forty. (See *Alopecia*, also *Laws of Hereditary Descent*.)

There is very little to be done for *baldness*. My directions are very simple.

1. Do not keep the head too hot. *Closely fitting and heavy hats* are probably injurious to the scalp. *Over-work of the brain* induces congestion of that organ, and is probably injurious to the scalp and hair.

“In respect to the treatment of alopecia (baldness, Plate 8), it must be remembered that the falling off of the hair is not the disease, but the consequence of the same. Medical advice is therefore necessary, in order to investigate the nature of the individual case, and to find out the cause of the affliction. Hence it is evident that no general remedy is possible, and that no cure of baldness can be successful until the cause has been discovered and removed. If the patient be of weak constitution or ill-nourished, he must be

strengthened ; if some important functions, as digestion, etc., have been deranged, they must be restored to their normal action ; if undue nervous activity be the cause, special attention must be directed to the nervous system, and it requires sometimes the most attentive consideration of the case, and a very rational treatment, in order to arrive at the desired end. Some time ago I had a lad, twelve years of age, under my care in the Farringdon Dispensary, who, in the course of a few weeks, had lost his hair in such a manner as to leave the scalp entirely bald. The boy was very ill-fed, his complexion pale, and his constitution weakened. After I had procured better food and administered appropriate internal remedies, the hair soon began to grow, and the head regained its normal appearance, without my having applied any local remedy in the shape of lotion, ointment, plaster, etc.

If people used less grease on their heads, and more water, and if they were more obedient to the laws of health in other respects, I believe there would be less complaints from baldness.

I am inclined to the opinion, however, that a moderate amount of pomade is not injurious, provided the head is frequently and thoroughly cleansed in the manner above described.

On this subject Beigel thus remarks :

“ Concerning the management of healthy hair, the most simple means will prove the most beneficial. Cleanliness of the scalp, cutting the hair now and then, and keeping it moderately greased by some simple pure oil or pomatum, will suffice under all circumstances. Falling out of the hair or other abnormal phenomena are diseases, and must be treated as such.

“ It may, perhaps, be convenient to add some prescriptions for the preparation of oils or pomatums generally in use, and (like pomatum of quinia, or of tannin and quinia) considered to act beneficially on the skin and roots of the hair.

“ The best means of cleansing the scalp is a weak solution of alcohol in water, or a solution of subcarbonate of soda, distilled water, and essence of vanilla.

“ The preparations called ‘ bandoline,’ ‘ fixature,’ etc., much used for the purpose of rendering the hair glossy and fixing the bandeaux in the required position, according to the same author, are prepared of

Gun tragacanth,
Distilled water.

To be allowed to digest for five or six hours, then strain through muslin, press, and add

Alcohol,
Rose-water.

Mucilage of cydonia and eau de Cologne are also frequently employed for a similar purpose.

PRESCRIPTIONS FOR OIL.

Take—Castor oil, 3 oz. (96 grams),
Essential oil of sweet almonds,
Oil of roses, 2 drops of each ;
Orange oil, 5 drops ;
Lemon oil, 10 drops.

If preferred colored, this may easily be done by digesting a little alkanet-root in it for a few days.

MARROW OIL.

Take of—Clarified beef-marrow, $1\frac{1}{2}$ oz. (48 grams) ;
Oil of almonds, $\frac{1}{4}$ pt. (128 grams).

Melt them together and scent the mixture at will by a few drops of any essential oil, viz., bergamot, cloves, lavender, lemon, neroli, nutmeg, etc."

It should be remarked here that those who are afflicted with chronic inflammation of the middle ear, with catarrh, should be cautious about bathing their heads or letting the shower-bath fall directly on it. They should, as a rule, use tepid water.

HAIR-DYES.

These are more or less injurious. They are usually composed of very poisonous substances. The substances may be absorbed and injure the system. *Sugar of lead* and *nitrate of silver* are common ingredients in our popular hair-dyes. *Lead*, *sulphur*, and *lime* also enter into the composition of these preparations. A case of direct injury to the nervous system from the use of these substances has come under my observation.

The following I copy from a foreign medical journal ; it tells its own story :

"*Sample No. 1. — Hair Restorer.*—The sample examined consisted of a colorless fluid and a grayish-yellow deposit. The deposit consisted almost entirely of sulphur, with a minute quantity of carbonate of lead. The solution contained acetate of lead and glycerine.

"In a bottle containing 10 fluid ounces, 44.8 grains of sulphur, and lead corresponding to 21.87 grains of acetate of lead, were found."



Plate H.



HORSEMINT. *Monarda Punctata.*



PLANTAIN. - *Plantago Major.*



NUX VOMICA. *Strychnos.*



SWEET FENNEL. - *Feniculum Vulgaris.*



NETTLE. *Urtica Dioica.*



MYRRH. - *Balsamodendron Myrrha.*

"*Sample No. 2. — Hair Restorer.*—The bottle examined contained $8\frac{1}{2}$ fluid ounces of mixture, composed, like the last, of a colorless fluid and a yellowish-gray powder ; this latter consisting of sulphur, with a trace of carbonate of lead, the solution containing acetate of lead and glycerine.

The results of an analysis of the contents of the $8\frac{1}{2}$ ounce bottle indicated 75.6 grains of sulphur, and an amount of lead corresponding to 87 grains of acetate of lead."

"*Sample No. 3. — Hair Restorer.*—Like the preparations previously noticed, this consisted of a colorless fluid and a yellowish-gray deposit, and also contained the same ingredients, viz., sulphur, acetate of lead, and glycerine, the deposit in this case being pure sulphur.

"A bottle containing 8 fluid ounces furnished 31.8 grains of sulphur, and lead corresponding to 45.1 grains of acetate of lead."

"Another preparation was found to be similar to the others, the deposit containing sulphur, sulphate of calcium, and a trace of sulphate of lead ; the solution containing acetate of lead, glycerine, and a trace of acetate of calcium. In distinguishing this preparation by the epithet vegetable, the maker has allowed his inventive faculty to overstep the bounds of truth, and has given moralists another instance of the common commercial practice of calling things by their wrong names.

"A bottle containing 6 fluid ounces furnished 70.2 grains of sulphur, mixed with sulphate of calcium (milk of sulphur having evidently been used in this case) ; also lead corresponding to 50.8 grains of lead."

The simple truth in the matter is, as Beigel remarks, "that of the two principal chemicals used for staining the hair, viz., *nitrate of silver* and *lead*, the former colors the skin as well as the hair, while the latter is poisonous, and liable to cause most painful colics, and even contractions of the limbs."

A perfectly harmless dye for the hair has not yet been discovered.

ABNORMAL GROWTH OF HAIR.

This is not a very common disease. The accompanying cuts (Plate 8) illustrate one or two phases that this disease may assume. They are chiefly interesting as curiosities.

It is perhaps hardly fair to call this a disease, but rather a deformity. There is, as we all know, a great difference in the quantity of hair with different individuals.

HAY FEVER—ROSE COLD—JUNE COLD—JULY COLD
—AUTUMNAL CATARRH—RAGWEED FEVER—
PEACH COLD—HAY ASTHMA—SNOW FEVER.

My remarks under this head are taken from my recently published work entitled "Hay Fever and Summer Catarrh." As the views here expressed are utterly opposed to those that have been commonly received, I would refer those who are interested in the subject, and especially sufferers from the disease, to the work itself, which describes all the points in detail and gives reports of a large number of cases. From the study of five hundred cases, obtained through a circular of inquiry taken in connection with the literature of the subject and personal observation of many sufferers at various stages of the disease, both at home and in non-catarrrhial regions, I derive the following general conclusions :

1. Hay fever is essentially a neurosis—that is, a functional disease of the nervous system.

In order to induce an attack, there is necessary, first of all, a predisposition, frequently hereditary, to special and excessive sensibility of the nerves supplying the affected parts.

The debilitating influence of heat and the external irritation of hay dust, and a large number of vegetable and other substances, are *exciting* causes merely, widely varying in their effects with different individuals, and of themselves are powerless to induce, or at least to sustain, an attack.

As the disease depends mainly on the individual predisposition, no two cases will be precisely alike, but all will differ as individuals differ.

2. All forms of the disease in all countries, whether occurring in the spring, summer, or autumn, and variously known as "rose cold," "peach cold," "June cold," "hay fever," hay asthma, "ragweed fever," and autumnal catarrh, are but manifestations of one disease for which the most appropriate name is summer catarrh, which may be subdivided into the early form, middle form, or July cold, the existence of which form was discovered during these researches, and the later form, or "autumnal catarrh."

3. As the disease is not due to any single specific cause, animal or vegetable, as has been supposed, no specific will ever be found for it. As with ordinary asthma, sick headache, to which it is in some respects analogous, the attacks may be prevented and relieved, and some remedies will act specifically for individuals ; but no one remedy will ever be found to relieve all cases.

4. The leading indications in the prevention and treatment of the disease can be met by spending the season of the attack—

(1) At sea ; preferably in high latitudes, where the air is always cool, and entirely free from vegetable and animal irritants. This is a sure prevention.

(2) In elevated mountainous regions, where in all latitudes the air is cooler and more invigorating than at low elevations, and some at least of the vegetable irritants are less abundant. In this country the White Mountains and Adirondacks are excellent resorts for hay-fever victims ; in the Marquette is a good resort.

(3) In high latitudes, at any elevation where the air is sufficiently cool.

(4) At the sea-shore, or on islands near the coast, usually relief comes when the wind blows from the sea.

(5) For those who cannot leave their home, keeping quiet in cool, closed, darkened rooms.

(6) For those who, in spite of these precautions, or from inability to take them, are attacked with the disease, the remedies should be quinine, arsenic, iron, electricity, and the cold powder (see Cold Powder), before and during the attack ; ordinary treatment for asthma ; local applications of quinine and camphor by the atomizer ; and for palliatives, Turkish and Russian baths ; and any one or several of the great variety of remedies that experiment shows to be most useful for each individual.

The facts and arguments by which the first proposition that hay fever is primarily and essentially a neurosis is established are as follows :

1. Its hereditary character. The facts which sustain the view that this malady runs in families are of a most overwhelming character. From this we justly conclude that the disorder is of a constitutional character, in the sense that a tendency to it is innate in the organization. Many have the disease from infancy.

2. It prevails mostly among those who have the nervous diathesis.

3. It is peculiar to modern civilization, and prevails mostly in those countries where other nervous diseases prevail.

4. The symptoms are largely of a nervous character.

5. The disease has a vicarious character, sometimes taking the place of other diseases.

6. It is affected for better or for worse by those influences that operate through the nervous system.

7. Of the threefold factors that seem to be necessary for the production of the disease—predisposition, the depressing influence

of heat, and external irritants of some kind—no two are sufficient to excite the symptoms in any degree unless one of the two be the predisposition.

8. Like other functional nervous diseases, hay fever appears to be excited more by heat following cold than by continuous heat.

Symptoms.—The leading symptoms of the disease are itching of the eyes, nose, and mouth, violent and protracted sneezing, profuse discharges from the nose and eyes, swelling, pain, and obstruction of the affected parts, cough, asthma, and debility.

Hay fever is distinguished from a common cold by the nervous character and greater severity of the symptoms ; by its periodicity ; by the fact that it is influenced by dust and other irritants ; is less susceptible to treatment, and is relieved at sea and on the mountains. Many people suffer from hay fever for years before they suspect that it is any thing more than a common cold.

It is distinguished from ordinary asthma by nasal and other symptoms, and by its periodicity, usually coming on in the spring, summer, or early autumn. The different forms may interchange.

There are some who are troubled by attacks of hay fever all the year round—in winter as well as in summer. There are some who, if they return from the mountains too soon, are troubled with cough or asthma or debility for several weeks and months.

There are some who fear attacks of hay fever whenever in the winter they are out in the *snow*, especially when the sun is shining upon it. This form is called *snow fever*.

Among the more common of the irritants that excite the symptoms in those who are nervously predisposed are the following :

Dust of any kind ; pollen of ragweed (or Roman wormwood) ; pollen of the different grasses ; pollen and the odor of roses and other flowers ; pollen of Indian corn ; bright sunlight ; peaches, watermelons, strawberries, raspberries, grapes ; brimstone matches ; hay, dried and newly mown ; fog, dampness, feathers, snow ; odors in emanations of certain animals, as horses, cats, guinea-pigs.

This list does not exhaust the number of irritants that are liable to excite the paroxysms of hay fever in those who are predisposed, but it includes those that in this country are best known and most frequently observed.

Some are sensitive to one or two of these irritants ; others are sensitive to all, or nearly all of them. Some are sensitive only during the summer or autumn ; others are sensitive, though usually in a less degree, all the year. Some are so sensitive that they cannot enter a room where there is a rose, a peach, or a strawberry.

The form of hay fever known as autumnal catarrh is very often excited by the pollen of *ragweed*, or *Roman wormwood*, but in some cases also by the pollen of *Indian corn*, or *golden rod*. But none of these irritants, or all combined, have any effect to excite the symptoms of hay fever in those who have not the nervous predisposition.

A few years ago there was organized the *United States Hay Fever Association*, the object of which is this: the obtaining and diffusing all possible facts relating to this disease. The association numbers several hundred members, and meets annually in Bethlehem, New Hampshire, where so many sufferers are accustomed to resort.

The following abstract of my remarks before the meeting of this association the present summer (1878) may be of interest as giving the latest views and experiences relating to this important and most interesting subject:

“There has been very considerable progress made in the treatment of hay fever during the past year. While there was no specific that would reach all cases, there were a number of remedies—sedatives and tonics—that gave great relief to nearly all cases. All the symptoms could be relieved by treatment. In many cases asthma, one of the worst features of the disease, was entirely prevented. Among the cases that came under his observation and care last year coughs also were greatly relieved if not abated. These satisfactory results were also obtained not only in his practice, but also in that of other physicians in different parts of the country, who carried out the same principles of tonic and sedative treatment. Even those who could not leave their homes and places of business could find relief in this way. Physicians during the past two or three years were getting more interested in this subject, and everywhere were treating the cases more intelligently and most successfully. Each case must be treated by itself, for no two cases were precisely alike. Your hay fever is not my hay fever. The time would come, and in this generation, when sufferers from hay fever would go to their family physicians for this trouble as for all other troubles, and would obtain relief. The nerve theory of the disease revolutionizes its treatment. There has indeed been the same revolution in our theory and treatment of hay fever as in our theory and treatment of sick headache, which is a disease analogous to hay fever, and belongs to the same family of functional nervous diseases. Sick headache, formerly so obstinate and incurable, can now be wonderfully relieved, and in many cases the habit broken up by proper treatment. At the present time we can do about as much

for hay fever as for chills and fever, and no doubt we shall continue to make progress from year to year.

"No disease known to science is more hereditary than hay fever. I knew of a family, that of Chief-Justice Shaw, of Massachusetts, where there had been eleven cases of the disease. I have found fifty cases in twelve families—an average of four to a family.

"The disease attacks all ages, from a few hours after birth to extreme old age. In regard to exempt regions he would say it was not safe to recommend a region as exempt because one or two cases had been relieved there. With places, as with medicine, what may help one may not help another. After twenty-five patients have visited a place and over twenty out of that number have been radically benefited, you may call that place a relief region for hay fever. The seaside, even such places as the Isle of Shoals, Fire Island, and Mount Desert, are a delusion whenever the wind blows from the land. They cannot therefore be recommended with enthusiasm, for they are untrustworthy. The great essentials for a relief region for hay fever are wide extent of forest, of at least fifty or one hundred miles in every direction, coolness, and elevation. All these conditions are met in Bethlehem and vicinity, although there are some cultivated regions which produce corn and ragweed; hence some of our visitors suffer, especially on *warm* days.

"Nowhere else do so large a number of patients find relief, although the entire mountain plateau of this vicinity is excellent. Individual cases that are not benefited at Bethlehem may find relief at Jefferson, and *vice versa*. Dust is a more common irritant for hay fever than any thing. Strictly speaking the disease ought not to be called hay fever, but *dust* fever. In the mountains and forest we escape the dust except when the streets are dry. This evil could be obviated by watering the streets in dry weather. His conclusions in regard to hay fever, its nature and treatment, were based upon the observation and study of over five hundred cases. In regard to the future of hay fever, he believed it would increase for some years, and then there might be a tendency to check itself like other functional nervous diseases of the family to which it belongs. Nervous dyspepsia, for example, which, twenty-five years ago, was very common in this country, is now diminishing, because the American people live more wisely and in general better obey the laws of health. The American people, during the past fifteen years, have been growing fatter and larger. We weigh more than our fathers did, and our women, among the better classes in our great cities, are growing handsomer and stronger every year.

"At the present time there are probably 40,000 or 50,000 hay-fever victims in this country. By the twentieth century this large army may be doubled. After that date it may not unlikely begin to diminish relatively to the population—just as nervous dyspepsia is now doing." *

* The United States Hay Fever Association publishes an annual report. From the report published in 1878, prepared by Dr. James E. Barbour, of Norwalk, Conn., himself a severe sufferer from the disease, I extract the following :

"The opinion that the nervous system is primarily at fault in hay fever, constituting the base of the predisposition or predisposing cause, appears to have been steadily gaining ground for some years.

"In 1865 Dr. Pirrie, in writing upon the irritable catarrhal form of the disease, speaks of the morbid influence (which he holds to be heat and direct sunlight) operating 'upon certain centres of the cerebro-spinal and sympathetic nervous systems.'

"In 1872, while in the Catskills and at Fire Island, I ascertained that among forty-three hay-fever invalids a large majority belonged to distinctly neurotic families, that the disease appeared to be hereditary, and that it had strong affinities with certain nervous affections.

"To Dr. Beard belongs the credit of placing it, by his observations and writings, among the functional nervous diseases, which we admit, while we differ in some other points.

"The affections known as Hay Fever, June, Peach, or Rose Cold, or Summer or Autumnal Catarrh, have not only a close affinity to the above, but are intimately related to other disorders characterized by perverted nerve action or functioning, as Asthma and Laryngeal Spasm, more remotely but actually to Sick Headache, general Neuralgia, Angina Pectoris, Epilepsy, etc.

"Certain foods usually considered wholesome may habitually produce illness, as when shellfish, veal, strawberries, and melons produce nettle rash, or honey, eggs, etc., induce violent colic, or when buckwheat cakes or raspberries give rise to painful swellings of the ears, face, and legs, or the former, as well as chestnuts or filberts, to irritable catarrhal symptoms. Again, perfumes in some cases will induce 'hay-fever' symptoms, or in others affect the voice injuriously. It is related of Parepa Rosa that she would use no perfumery when about to sing, owing to this peculiarity. Smelling of certain flowers, notably of roses or fruits, as melons or peaches, will produce in some persons sharp catarrhal and asthmatic symptoms, or both. Timothy grass (hay) and the pollen of other plants have upon others a similar influence. The powders of drugs, ipecac, bloodroot, scammony, and Persian insect-powder, in the susceptible occasion symptoms, lasting sometimes for several days, which are supposed to be characteristic of hay fever. Many odors, both vegetable and animal, feathers, wheat, or buckwheat flour, excessive heat, confined air, etc., etc., may induce asthmatic or catarrhal attacks."

The report also gives the following hygienic suggestions :

To invigorate the nervous system, by all possible means, preceding the attack.

To seek relief by change of locality, if possible, a few days *before* the advent of the paroxysm.

To keep the skin in active healthy working order, by warm baths at bed-time, and *cold sponging*, with *active rubbing*, in the morning. Better, occasional Turkish or Russian baths.

To regulate the bowels and kidneys.

To live mostly, for a while preceding the critical time, upon a milk diet, supplemented by vegetables and little or no meat, once daily—fruit in the morning.

RESUME OF TREATMENT.

1. *Cold powder.* (See Cold Powder.)
2. *Central galvanization.* (See Electro-Therapeutics and Central Galvanization.)

The above is of very great service.

3. The following tonic prescription :

Fowler's solution, 2 parts,
Tincture of belladonna, 1 part,
Tincture of nux vomica, 10 parts.

Dose.—From fifteen to thirty drops after meals.

Begin one month before time of expected attack and keep on taking it. At the same time take 1 or 2 grains (.06 or .12 gram) of quinine before each meal.

4. For inhalation for the nasal symptoms :

Carbolic acid, $10\frac{1}{2}$ drachms (42 grams),
Ammonia, 3 drachms (12 grams),
Alcohol, 5 drachms (20 grams),
Water, $7\frac{1}{2}$ drachms (30 grams),

Inhale the vapor through the nose.

For inflammation of the eyes :

Borax, 8 grains (.5 grams),
Camphor water, 1 ounce (32 grams).

Apply directly to lids and eyes.

Abundant breathing of the purest air.

Much sleep.

The best air will be found on the highest elevations.

Sleep and live, when indoors, in the rooms that are the highest from the ground, thus avoiding the dampest and most poisonous air, which lies nearest the ground in the evening, night, and early morning.

Have a plain and nutritious, rather than a rich and highly-seasoned, stimulating diet. Avoid food containing much sugar, starch, or fat.

Vigorous exercise causes deep breathing, and, if taken where the air is laden with malaria, greater quantities of the poison will be inhaled and greater suffering will ensue ; but taken on a high elevation, or in the middle of the day, when and where the air is purest, it may invigorate the system and enable it the more readily to resist or repel disease.

Wear flannels ; and dress to keep comfortably warm or cool, without sudden changes of the temperature of the body, either to heat or to chill it. Avoid dust, the hot sunshine, the damp night-air, late hours, late and hearty suppers, and the vitiated air of crowded rooms.

6. Bromide of ammonia, from 20 grains to 1 drachm (1.25 to 4 grams),
Water, 1 ounce (32 grams).

Use with atomizer in nostrils and against the back part of throat.

7. For the asthma :

Gin and glycerine, equal parts.

DOSE.—Take a tablespoonful or more on retiring.

8. Turkish and Russian baths.

9. The following prescription for *cough* and *asthma* :

Grindelia robusta, 2 ounces (64 grams),
Yerba santa, 2 ounces (64 grams),
Fowler's solution, $\frac{1}{2}$ ounce (16 grams),
Glycerine, 2 ounces (64 grams).

DOSE.—One teaspoonful after meals and before retiring. If there is nausea, diminish the dose.

There is much needless suffering from hay fever. Almost every one can find relief if they will try, under wise guidance, some of the remedies that have been found to be of service. It is not necessary for all to leave their homes and go to the mountains or sea. They can, with a measure of success, fight out the battle at home, but if we can go to the mountains it is far better as well as pleasanter to do so.

Now and then a case is so obstinate that relief can only be obtained by hypodermic injections of *morphine*. This treatment should never be taken without the advice of a physician. When travelling, cover the face with a wet handkerchief to keep out the dust.

HEADACHE.

Headache is a symptom of a great many and very different diseased conditions of the body.

Strictly speaking there are as many different kinds of headache as there are different diseases that may give rise to headache. As a matter of convenience, however, we only distinguish a few varieties of headache, and between these the line is not very closely drawn. Headache may come from actual diseases of the brain of various kinds ; in the great majority of cases, however, it is merely

symptomatic or reflex—the result of disease in the stomach, in the liver, in the womb or genital organs, or in the general nervous system, or of a poison in the blood.

It is one of the most common and most annoying of the nervous maladies of our time. It visits every family, and at one time or another attacks nearly every individual.

GENERAL TREATMENT OF HEADACHE.

1. Treat the *cause* that produces the congestion, if it can be ascertained. Treat the *rheumatism*, the *dyspepsia*, the *disease of the liver*, or of the *womb*. Remove the cause, and the result must then disappear.

2. Give internally *bromide of potassium* in large doses, 10 to 40 *grains* (.62 to 2.50 grams), one, two, or three times a day, as may be necessary. Remember always in giving this remedy that it may, in very rare cases, produce unpleasant results; may aggravate the disease, and *produce temporary insanity*; and that, like iodide of potassium, it often *produces eruptions on the skin*.

Bromide of potassium reduces the *volume of blood in the head*.

It is difficult, and oftentimes impossible, for patients to distinguish the *congestive* from the *nervous headache*. The distinction is not ordinarily observed by physicians, and only introduced here for convenience of description.

“SICK HEADACHE”—NERVOUS HEADACHE—BILIOUS HEADACHE—
MEGRIM—HEMICRANIA.

Sick headache is a form of constitutional neuralgia, at once very frequent, very distressing, and very rebellious to treatment.

The constitutional character of this affection is proved by its manifestations, its course, its causation, and its hereditary character. Like all the neuroses, it runs in families, and oftentimes skips a generation.

The nervous diathesis which in the parent appears as epilepsy, may be developed in the child as sick headache, and reappear in the grandchildren as epilepsy again.

Chorea and hysteria, neuralgia and paralysis, hypochondriasis and insanity, seem thus to be interchangeable and varying manifestations of the nervous constitution. Sick headache is a *storm* in the system, not unlike the storms that we observe in nature. Like a storm, it comes on with haziness, dulness, heaviness, at once undefinable and oppressive. Its progress is marked by derangement of all the vital forces—probably by magnetic disturbances analogous

to those which occur in nature—by general agony and distress, that render exertion of brain or muscle almost impossible and existence itself a sorrow.

Like a storm, also, sick headache seems to relieve the system by driving out the impurities, equalizing the circulation, restoring the magnetic equilibrium. Therefore it often leaves the patient brighter and happier than before. When accompanied, as it often is, by vomiting, by abstinence from food, and by rest from all exertion, sick headache appears to be as much a remedial process, and as necessary and beneficial to the system, as a thunder-storm to the atmosphere. Sick headaches also are analogous to storms in their intensity and vehemence, and in the fact that, when in full blast, measures that aim to stay their progress are often futile.

Symptoms.—The affection is usually accompanied by a *sharp or dull* pain in the *forehead*, and especially through the *left* eye. The general depression that accompanies the attack seems to bear no relation to the severity of the pain, for ordinary neuralgias, even when far more severe, are not half so depressing, and do not interfere to the same extent with the processes of thought.

It is more than probable that the sympathetic or ganglionic system is chiefly at fault in sick headache, and by this theory we may explain the fact that it is brought on or aggravated by such diverse causes. The nausea and vomiting that are accompanying symptoms sometimes relieve the distress, but frequently aggravate it. The common idea that sick headache is the result of the accumulation of bile, or indeed of any local disorder of the digestive apparatus, is mostly erroneous. In the majority of cases, the vomiting is itself the *result* of the attack of headache, which in its turn is the result of some cause that has acted injuriously on the *nervous system*, such as great excitement, anxiety, prolonged abstinence from food, or some undue mental exertion. It is probable that indigestion brings on sick headache chiefly through its effects on the nervous system.

Exciting causes.—An attack of sick headache may be brought on by overwork, excitement, lack of sleep, indigestible food, a stomach long kept empty, or excess of any kind. Exposure to heat is a very common exciting cause.

Treatment during the attack.—I have myself been a frequent sufferer from this disease, and have experimented thoroughly on myself and on others with nearly all of the well-known remedies and systems of treatment. My conclusion is, that sick headache is much more relievable and curable than is commonly supposed.

Almost all cases can be relieved in less than ten hours, sometimes in half an hour.

The disease is a very common one. It visits nearly every household. It is, moreover, a disease that patients are usually *obliged to treat themselves*.

The plan of treatment which I propose, and which I usually find more or less successful, is as follows :

1. *Begin treatment early*, before the disease is at its height. This rule is as important in the treatment of sick headache as in the treatment of a common cold. (See Common Cold.) Commence treatment as soon as you *suspect* that an attack is coming on. Some persons can foretell when they are to have an attack for several hours in advance ; others have very little warning.

2. Take 1 or 2 grains (.06 or .12 gram) of *citrate of caffeine* dry on the tongue. Repeat the dose in half an hour if there is no relief. Some can bear 3 or 4 grains (.18 or .24 gram) at a dose. Begin with moderate doses.

This is a wonderful remedy for sick headache. I have called the attention of many physicians to this, and their results confirm mine. Caffeine is easy to take, is not unpleasant, is not dangerous in moderate doses. It is the active principle common to coffee, tea, chocolate, and guarana. It acts in some cases, when just the proper dose is taken, with magical power. The only objection to its use is that it keeps one awake if taken late in the evening. One can take it and go right on about the routine of business.

Take a pill of cannabis indica (Indian hemp), $\frac{1}{2}$ or $\frac{1}{3}$ of a grain (.03 or .02 gram). Repeat in half an hour if necessary, or double the dose.

This remedy sometimes succeeds when caffeine fails, or when caffeine has worn out its virtue by long use.

3. The following pill :

Extract of cannabis indica, $\frac{1}{2}$ drachm (2 grams),

“ “ guarana, $1\frac{1}{2}$ scruple (1.87 gram),

Citrate of caffeine, 1 drachm (4 grams),

Mix, and make into sixty pills.

DOSE.—Take one pill and repeat the dose in one hour if necessary.

4. Valerianate of ammonia or muriate of ammonia in doses of 20 or 30 grains (1.25 or 1.87 gram) in a tumbler of cold water. Sometimes this is all that is necessary.

5. Guarana (Paullinia Sorbilis) is the fluid extract or tincture in

doses of from 1 or 2 teaspoonfuls (4 to 8 grams) to 1 or 2 tablespoonfuls (20 or 40 grams) every hour until relieved.

6. Five grains (.30 gram) of *calomel* dry on the tongue. When this operates there will usually be relief, but it is a slow remedy.

7. Take 30, 40, or 60 grains (1.87, 2.50, or 3.75 grams) of *bromide of potassium* in half a tumbler of cold water. If this fails, repeat the dose. This remedy is very efficacious, although it is not a specific. (See Bromide of Potassium.)

8. Take 1, 2, or 3 grains (.06, .12, or .18 gram) of *oxalate of cerium* dry on the tongue. It is not necessary to be particular about the dose. The finger may be moistened and dipped in the powder once or twice. This remedy, which is very little known, sometimes acts like magic.

The dose may be repeated a number of times, if necessary. (See Oxalate of Cerium.)

9. Hypodermic injections of atropine and morphine. These should only be used as a last resort, at least by those not medically educated. They afford immediate relief. (See Hypodermic Injections.)

10. *Applications of ice to the back of the neck and spine.*— Pieces of ice may be folded in a towel and held firmly against the back of the neck and down the spine for ten, fifteen, or twenty minutes. Sometimes this remedy alone will relieve the pain and induce an agreeable slumber.

Other remedies are the following :

Liquor acetate of ammonia in doses of 1 or 2 teaspoonfuls (4 to 8 grams).

Carbonate of ammonia in doses of from 5 to 15 or 20 grains (.3, .9, or 1.25 grams) in water.

Chloride of ammonia in doses of from 10 to 20 grains (.625 to 1.25 grams) in water.

By one or by all of these methods sick headache can in almost all cases be relieved or cured.

Patients are frequently so disappointed by their failures in the use of these remedies, that they become discouraged and try nothing whatever.

TREATMENT OF SICK HEADACHE DURING THE INTERVALS OF THE ATTACK.

To prevent these attacks, all possible means should be used to strengthen the system.

Specially the following are to be recommended :

1. *Cannabis indica* in doses of from $\frac{1}{4}$ to $\frac{1}{2}$ grain (.015 to .03 gram) three times daily for three months. I have known this single prescription to succeed when no other treatment was used. The discovery was made in Europe, and it is a very important one.

2. *Central galvanization*.—This I have used with excellent effects in a number of cases. The treatment must be kept up for a long time.

In no one nervous disease of modern times has there been more satisfactory progress than in the treatment of sick headache.

DISEASES OF THE HEART.

1. There are two classes of diseases of the heart: *organic and functional*. *Organic* diseases are those which are connected with *actual morbid changes* in the heart. Among these we may mention *enlargement, dilatation, aneurism, inflammation of the lining membrane, inflammation of the covering, disease of the valves, fatty degeneration, angina pectoris or breast-pang*.

Functional disease of the heart is disturbance in its action, caused by sympathy of reflex action. Between these two conditions—functional and organic—there is a very wide gulf. The distinction between these is a distinction between a grave disease and one of a trifling character; oftentimes a distinction between death and life.

And yet the general symptoms of organic and functional disease are oftentimes quite similar.

Palpitation, uneasiness in the region of the heart, and even difficulty of running and climbing, as well as actual pain in or near the heart—all these unpleasant symptoms are common to both organic and functional diseases of the heart.

Those who are afflicted with these general symptoms, and who are annoyed and worried by them, ought as soon as possible to have the question definitely *settled*. Now there is only one way in which this question can be settled; and that is, by getting the *opinion of some skilful and honorable physician, who is practised in the arts of auscultation and percussion*, or what is commonly known as “sounding the chest.” (See Auscultation and Percussion.)

The most skilful physicians in the world cannot tell whether a patient is suffering from organic or functional disease by the patient’s story alone. The last appeal must always be to *auscultation* and *percussion*. The sphygmograph also helps to study diseases of the heart. (See Sphygmograph.)

Some persons fear to consult a physician lest he may tell them unwelcome truths. This feeling is unmanly. The true way is to look our difficulties *squarely in the face*. Any thing is preferable to suspense. Better to know our danger, and to face it. The man who knows that he has some incurable organic disease of the heart is usually much happier than he who *fears* and suspects he may have, yet dares not consult a physician and have his doubts solved.

But as a matter of fact, the great majority of those who fear or suspect *that they have organic disease are really suffering only from sympathetic or functional disturbances*, coming from dyspepsia, anæmia, or general nervous debility. There are thousands in our country who go all their lives fearing lest they may die at any moment from some imagined disease of the heart, who, if they consulted some good physician, would find out *that really their symptoms meant nothing more than dyspepsia or general debility*.

On this subject the following remarks of Professor Austin Flint are worthy of attentive consideration :

“ It is extremely desirable, in view of the comfort and welfare of the patient, to determine with positiveness, in cases of functional disorder, that structural lesions do not exist. Several points connected with the history and symptoms have a bearing on the diagnosis. The occurrence of the disturbance in paroxysms, the action at other times being regular ; the paroxysms occurring at night rather than in the daytime, and frequently not being occasioned by any obvious cause, such as muscular exertion or mental excitement ; the ability of the patient to take active exercise without palpitation, or difficulty of breathing when not suffering from the disorder, and the intensity of mental anxiety and apprehension, are points which render it probable that the difficulty is purely functional. These points, however, are not conclusive. A positive diagnosis is to be based on the exclusion of lesions of structure, by the absence of the physical signs of the latter. If, on a careful examination of the chest, the heart be not found to be enlarged ; if there be no murmur present, or if an existing murmur be inorganic, and the heart-sounds be normal, the affection may be confidently pronounced functional. Without the negative proof afforded by physical exploration, the mind of the practitioner must be in doubt as to the diagnosis. If he give a decided opinion, it is a guess which may prove to be either right or wrong. If he avoid giving a decided opinion, the inference which the patient usually draws is that organic disease exists, and the physician is reluctant to tell him the truth. I could cite from the cases which have come under my

observation not a few in which patients were for many years rendered unhappy, and deterred from engaging in the active duties of life, by either an erroneous medical opinion that they had organic disease of heart, or by a fixed belief that such was the fact, based on the indecision of their physicians."

ORGANIC DISEASES OF THE HEART.

Organic diseases, even, are not always such terrible maladies as many suppose. They are not always speedily fatal. They are not always fatal at all. A patient with organic disease of the heart may live for years, and yet finally die of some other disease.

Treatment.—Tonics, quiet, easy activity, nourishing food, abstinence from excitement, and from all sudden, violent, spasmodic exertion of mind or body—this is about all that we can do.

Other medicine, except that which is given for the relief of pain, is valueless.

Acute inflammation around the heart (pericarditis) and within the heart (endocarditis), occurring in rheumatic fever, are to be treated by the remedies that are given for rheumatism. (See Rheumatism.) Either of the following are recommended.

Tincture of digitalis, 10 drops (.3 gram),
Carbonate of ammonia, 5 grains (.3 grams),
Water, 1 drachm (4 grams).

Dose.—Take the above amount three times daily.

Tincture of digitalis, 10 drops (.3 gram),
Spirit of nitrous ether, $\frac{1}{2}$ drachm (2 grams),
Infusion of buchu, 1 ounce (32 grams).

Dose.—Take the above quantity four times a day.

INFLAMMATION OF THE HEART.

In very many cases inflammation of the heart is not attended with positive symptoms, but we may suspect its existence if the patient, after having suffered under rheumatic fever, complains of a load or fulness about the heart, with dull pain, restlessness, anxiety, and occasional palpitation.

NERVOUS DISEASE OF THE HEART.

The heart is very subject to disturbance of its action, not depending on organic disease, but on certain impressions conveyed to it from distant parts through the nervous system. The only symptom of this nervous disturbance to which we need allude is *palpi-*

tation. It is of great importance to distinguish *nervous palpitations* of the heart from palpitations which depend on derangements of the heart's structure (*organic*); because the former, although they excite considerable anxiety and alarm in the patient's mind, are completely under the control of medical treatment.

Symptoms of nervous palpitation.—*Nervous* palpitation may be distinguished from *organic* palpitation by the following circumstances. Nervous palpitation is apt to come on more particularly when the patient is lying awake in bed, at the beginning of the night. It is not rendered worse by moderate exercise, but is rather relieved by it; whereas *organic* palpitation is necessarily increased by any corporeal exertion, however slight. Nervous palpitation is often accompanied by other nervous symptoms, and whenever the latter are increased the palpitation becomes increased with them. Finally, in nervous palpitation there is generally some *intermission*—that is to say, the patient is free from it at certain times, during which the pulse and heart beat quite naturally; while in *organic* palpitation, there is hardly ever any cessation of this distressing symptom, because the diseased structure upon which it depends is *constantly* irritating the heart, and compelling it to act with violence.

Nervous palpitation commonly occurs in men of nervous temperament, who have been rendered more irritable by the too free use of ardent spirits, by excessive venery, long study, or the depressing passions. It often attacks persons who are much addicted to smoking tobacco, or have frequently suffered from indigestion. In women this affection generally depends on green-sickness (*chlorosis*), or hysteria; it may also be connected with excessive loss of blood.

Treatment.—As nervous palpitation is merely a symptom of some other disorder, its treatment must be subordinate to that of the disease upon which it depends; to prevent repetition, therefore, I would refer my readers to the articles on dyspepsia, green-sickness, hysterics, and nervous disorders, etc. The first point in the treatment will naturally be to remove, if possible, the cause of the symptom. Excesses of all kinds must be avoided; the patient should take gentle exercise in the open air, and regulate his diet with attention. When the palpitation seems to depend on a very irritable and nervous temperament, change of air, sea-bathing, and the enjoyment of rational amusements will have much effect in quieting the heart's action; after which a course of mineral waters may be tried with advantage. When the palpitation is very distressing at night, it may be necessary to give some medicine which

will quiet the patient, and afford him relief until the other remedies that we are employing have time to produce some effect. (See Nervous Diseases.)

HEARTBURN—WATERBRASH (*Cardialgia*).

Heartburn, though not attended with danger, is often very difficult of cure. It occurs most frequently among poor people, is seldom met with before the age of puberty, and not often in old people. Females are more subject to it than males, and some women suffer from it only during pregnancy.

Causes.—It is often caused by eating fat or oily substances, cheese, or some particular article of food which disagrees with the stomach, and in general is merely a symptom of indigestion. It may arise from exposure to cold, sitting with wet feet, or from any sudden mental emotion; and in some individuals it cannot be traced to any cause.

Symptoms.—The symptoms are a burning sensation, attended with a feeling of constriction at the stomach, which, after continuing some time, is followed by frequent belching of a thin fluid, sometimes exceedingly sour, at other times insipid. The attack may come on at any period of the day, and may continue during several hours. In some people it comes on daily for weeks or months; in others it occurs only occasionally, in consequence of indulging in some article of diet difficult of digestion. Heartburn sometimes accompanies organic disease of the stomach or liver.

Treatment.—When heartburn comes on only occasionally, it may be relieved by means of a teaspoonful of *carbonate of soda*, or the same quantity of *magnesia*, taken in a little water; but when it recurs frequently and becomes very troublesome, more active treatment should be resorted to. In some cases, however, it is protracted through a period of many months, uninfluenced by any medical treatment which may be adopted.

Water-brash is one of the symptoms of dyspepsia. In order to treat it successfully we must treat the dyspepsia that causes it. (See Dyspepsia.)

As a means of temporary relief when the attack comes on, we may use *creasote* (one or two drops in water, well shaken), or *oxalate of cerium* (1, 2, or 3 grains (.06, .12, or .18 grams) dry on the tongue), or by *sulphite of soda* or *subnitrate of bismuth*. Some one of these four remedies will usually afford relief. Local *fara-dization* is also excellent. *Salicine* in doses of 10 or 15 grains (.60 or .90 grains).

HECTIC FEVER.

Symptoms.—In this species of fever the patient is attacked daily, between five and six o'clock in the afternoon, with rigors or shivering, which continues from a quarter of an hour to an hour, and is followed by quick pulse, hot skin, thirst, and restlessness. Delirium is not a symptom of this affection, and headache only occasionally occurs. Profuse sweating breaks out about ten or eleven o'clock, which relieves the patient, who then falls asleep, and on awaking, about five or six in the morning, finds himself bathed in perspiration. There is also another attack about noon, which is slight, and sometimes not attended with shivering. Indeed, hectic fever, when it has continued for some time and is completely formed, never ceases entirely, inasmuch as the pulse beats at least ten strokes in a minute more than it would do in a state of health; and in this respect differs from ague, in which there is a complete intermission.

The pulse is always quick, varying from a hundred to a hundred and twenty, and sometimes it reaches a hundred and forty. "Almost from the first appearance of the hectic, the urine is high-colored, and deposits a copious branny red sediment, which hardly ever falls close to the bottom of the vessel." The appetite is at first very little or not at all impaired, but gradually gives way as the patient's strength diminishes; the tongue is red and clean; the face is pale in the morning, but towards evening, when the feverish symptoms commence, a circumscribed redness appears on the cheeks, called *hectic flush*; and the white of the eyes has a delicate pearly tint.

The patient becomes weak and emaciated, the cheeks are hollow and sunken; the face is long and thin, and the eyes appear sunk in their orbits. Purging comes on at last; and this, with the excessive perspiration during the night, rapidly reduces the patient's strength, and he dies completely exhausted. (See Pulmonary Consumption.)

Causes.—Hectic fever may arise from irritation or slow inflammation of any part or structure of the body, associated with debility, or, as it is sometimes termed, a broken-down constitution; or it may be caused by the fluids of the body becoming corrupted in consequence of the absorption of morbid matter (pus).

Treatment.—Hectic fever being generally, if not invariably, symptomatic of some other disorder, the means of cure must, of course, have direct reference to the morbid state of the organ or part with which the fever is associated. I must therefore refer the reader to treatment directed for the diseases on which it depends.

HEMATOCELE. A bloody tumor. It may occur in the covering of the testicle, and in the vagina. When it occurs in the vagina it is called *pelvic hematocele*.

HEMICRANIA, or BROW AGUE. (See Headache.)

HEMORRHAGE. (See Bleeding of the Lungs, Bleeding of the Nose, Bleeding of the Womb, etc.)

HEPATITIS. (See Liver, Inflammation of.)

HERNIA. (See Rupture.)

HERPES.

This is an eruption of small groups of vesicles or pinhead-sized blisters upon a patch of inflamed skin. (See Plate XIV.)

Its outbreak is usually attended by more or less fever, which rapidly subsides, and the affection runs its course in a week or ten days, the vesicles becoming confluent and drying into thin scales.

The mildest form of herpes occurs upon the lips, and is known by the familiar name of "cold sores." Another form of herpes is known as shingles (see Zoster). It usually occurs upon the body, and is strictly limited to one side.

Treatment.—When herpes is extensive and accompanied by fever, the bowels should be opened by a mild laxative, and the diet restricted for a few days. Locally starch powder or lycopodium may be strewn over the vesicles to absorb the moisture, all stimulating ointments and washes being discarded. Cold sores can sometimes be checked when first noticed by painting them freely with spirits of camphor or other strong application. Later cold cream or camphor ice may be applied.

HICCUP.—(*Singullus*.)

Causes.—This affection usually arises from eating a too full meal or highly-seasoned food, drinking cold fluids, wind, acidity, and similar causes, particularly when the stomach is predisposed to it from debility. When arising from simple causes of this description, it is of little consequence, and seldom continues long; but when it comes on in a far advanced stage of fevers and internal inflammatory diseases, a fatal termination may soon be expected.

Treatment.—In ordinary cases hiccup ceases of its own accord, and may easily be checked by drinking a little cold water; by a sudden excitement of some degree of surprise, fear, or any other

strong mental emotion ; by swallowing a small quantity of vinegar, lemon-juice, or any other strong acid ; and when it occurs after a full meal, a little brandy generally puts a stop to it.

When hiccup is symptomatic, the treatment must depend entirely on the nature of the disease under which the patient is laboring.

Opium, *henbane*, and similar narcotic medicines are generally administered to palliate the distressing hiccup which so frequently comes on when fevers and inflammatory diseases are about to terminate fatally.

HIP-DISEASE.

This terrible and familiar malady, which I need not here describe, is now treated much more successfully than formerly. The principle of treatment, as originally proposed by Dr. H. G. Davis, is by extension of the limb, thus relieving the pressure in the joint.

Apparatus has been devised to carry out this principle most successfully. The treatment requires time, patience, and skill on the part both of the physician and of the friends of the patient.

In connection with this mechanical treatment, physicians also use internal tonics and nourishing food.

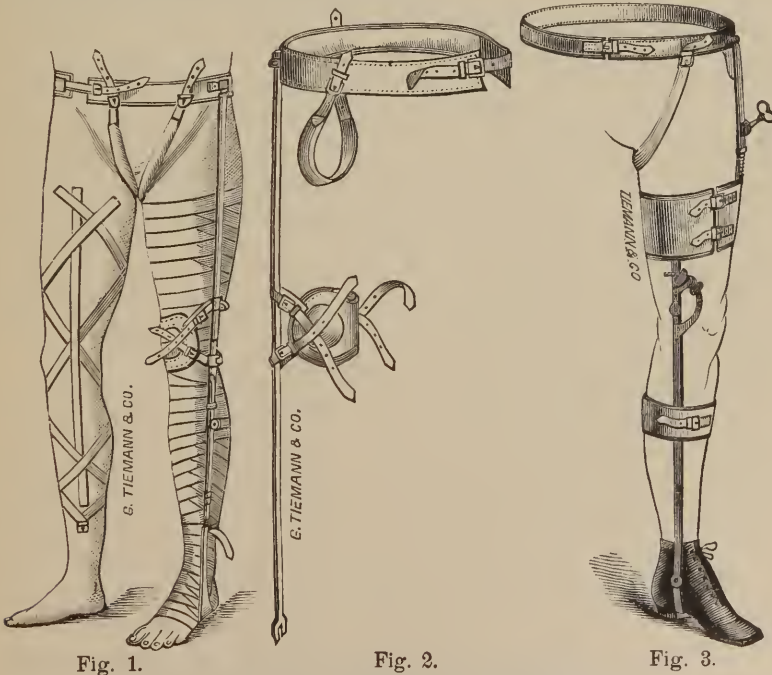


Fig. 1 Taylor's; Fig. 2, Washburn's; Fig. 3, Hutchinson's.

HIP JOINT SPLINTS.

HIVES. (See Nettle Rash.)

HOARSENESS. (See Throat, Diseases of.)

HOOPING-COUGH—CHIN-COUGH.

This disease sometimes attacks children suddenly, and without giving any warning ; but it generally happens that the child suffers under common cough for a week or two before the convulsive fits of coughing begin to show themselves.

Symptoms.—The first circumstance noticed about the child is, that the fit of coughing is more protracted than it was wont to be ; there is a kind of hitch in the cough which is peculiar, and this soon passes into the regular fit of hooping-cough. The fits of coughing succeed each other more or less rapidly, and are continued for a longer or shorter time, according to the severity of the disease, until they terminate in vomiting, or the spitting up of a thick frothy mucus from the lungs. When the convulsive efforts during a fit of hooping-cough are mild, the child suffers but little from the attack, and soon returns to his ordinary amusements ; but if the fit be severe, the blood is often driven to the head with such violence that it rushes from the nose or ears, or renders the eyes completely blood-shot, from rupture of small vessels in the white of the eye ; these circumstances should not cause alarm, for they are not attended with any immediate danger. The number of fits is extremely variable in different cases : sometimes the child will have only three or four during the day ; at other times they come on as often as every quarter of an hour, and are particularly annoying during the night. The convulsive coughing may last for three or four weeks, or even longer, when it begins to decline ; the fit gets less violent ; the mucus is spit up from the lungs in greater quantity, and the disease gradually wears itself out in five or six weeks.

Such is hooping-cough in its simple and mild form ; but in many cases the disease, either from its violence or from certain tendencies of the patient to diseases of the head or chest, becomes attended with very great danger to life. The danger is, in general, proportioned to the tender age of the infant, its constitutional powers, and the organ which may be attacked during the course of hooping-cough. Thus infants are more liable to be cut off by this disease than children ; weakly children run greater risks than those who are strong ; and much greater danger is to be apprehended when the head is attacked than when the lungs only become involved in the consequences of the disease.

Treatment.—I. *Tonics to sustain and strengthen the system.*
—We may give the child pyrophosphate of iron, in combination with quinine and strychnine (Wyeth's, or some similar preparation), or *cod-liver oil*, with nourishing food. (See article on Food.)

2. *Expectorants and other remedies* to relieve the distress and coughing. The profession at the present time have very little faith in the so-called expectorant remedies, yet they are sometimes useful. We may give any of the simple "cough mixtures." There is much less difference between them than is commonly supposed.

Thus,

Syrup of ipecac,
Syrup of squills, equal parts, in teaspoonful doses,

have been given. Recently *bromide of ammonium* has been used for whooping-cough, in doses of from 3 to 10 grains (.18 to .62 gram).

Chestnut leaves is an excellent remedy. Steep a handful in a pint of boiling water; sweeten, cool, and give as a common drink five or six times a day.

Hydrate of chloral in small doses has been earnestly recommended.

Picrate of ammonia has lately been used with asserted advantage.

In a number of cases I used *central galvanization* with encouraging results.

HORDEOLUM. (See Sty.)

HOUSEMAID'S KNEE.

Enlargement of the sac in front of the knee-cap. Much kneeling, as in scrubbing floors, causes it; hence the name.

Surgeons treat them by setons and operations of various kinds.

HYDROCELE—DROPSY OF THE TESTICLE.

A collection of serum or watering in the external covering of the testicle. Sometimes it is congenital.

The treatment is electrolysis (see Electrolysis) and injection of iodine after drawing off the water by a canula.

HYDROCEPHALUS. (See Dropsy of the Brain.)

HYDROPATHY. (See Water Cure.)

HYDROPHOBIA.

Hydrophobia arises from a morbid poison introduced into the system by the bite of a rabid animal. The animals that most frequently communicate this diseases are the dog, cat, fox, and wolf ; but whether it originates spontaneously in those animals, or is always transmitted from one to another, is unknown. Hydrophobia is always communicated through the medium of the saliva ; but it does not appear that this is capable of producing the disease without a wound having been inflicted, or the skin abraded. Some cases, however, are on record which would lead us to believe that the poison may find its way into the system through the mucous membrane of the lips, without abrasion of surface. The great majority of people bitten by mad dogs are not attacked by hydrophobia ; indeed, Dr. Hamilton is of opinion that at an average not *more than one person out of ten of those bitten* becomes affected with the disease, and this may be in a great measure accounted for by the saliva being wiped from the teeth in passing through the clothes ; hence the disease occurs most frequently from wounds inflicted on the face and hands.

The length of time which may elapse from the date of the bite of a rabid animal to the commencement of hydrophobia is very uncertain, but in general it declares itself after thirty or forty days ; though the poison has been known to remain in the system in a latent state during eighteen months, and even longer. The bitten part heals in the course of a few days, like any other simple wound ; but when the disease commences the cicatrix or scar becomes painful, red or livid, and swollen ; in some cases it reopens and discharges a thin, reddish-colored fluid. This, however, is not always the case ; symptoms of hydrophobia may commence without the part presenting the slightest change in appearance, or being in the least degree painful.

Symptoms.—The disease is ushered in by slight shivering, headache, general uneasiness, and loss of appetite ; by the sleep being disturbed by frightful dreams, and by extreme restlessness, agitation, and other symptoms of an excited or altered state of the nervous system ; at length the patient accidentally discovers that the sight of water or any shining substance distresses him, and on attempting to drink he is suddenly seized with a general and in-

voluntary shivering. The circumstance of the bite is now brought to his recollection, associated with the idea of hydrophobia, which strikes him with horror ; a distressing sensation of heat and constriction at the throat is soon experienced, attended with urgent thirst ; he appears exceedingly anxious and alarmed ; the throat is frequently seized with violent spasms threatening immediate suffocation, and the whole body is agitated. The spasms, after some time, extend to other parts of the body, and the fits become more violent and occur more frequently. The saliva increases in quantity, becomes viscid, and is sometimes suddenly thrown out from the mouth. Thick mucus also collects in the throat and air-passages, and in attempting to bring it up harsh sounds are uttered, which have been supposed to resemble the peculiar growling of a dog in a similar state. The breathing is oppressed from slight causes, such as the motion of the air caused by opening a door ; the slightest noise, and the sight or even the sound of water greatly increase the suffering. The miserable patient, however, cannot refrain from attempting to quench the urgent thirst which continually torments him ; he musters resolution, and with a determined effort raises the water suddenly to his mouth ; but before he can drink, is seized with a violent spasmodic fit, and the vessel is dashed from his lips ; thus, like another Tantalus, with the water within his reach, he is doomed to suffer from the most intolerable thirst.

Feverish symptoms are always present from the time that the disease is fairly constituted ; and frequent bilious vomiting, with much difficulty of breathing, adds greatly to the patient's distress ; the feeling of debility, also, which has been complained of from the commencement, is much increased towards the termination of the disease. Delirium seldom occurs, but there is great irritability both of body and mind ; while anxiety, distress, and occasionally fury are strongly depicted in the countenance. Sometimes, when in a fit of passion, the patient will even attempt to bite or spit at those near him, but he appears to be perfectly conscious of what he has done, and as soon as the paroxysm is over is ready to apologize for his conduct. In some cases though the pulse is very quick yet the skin remains cool ; and though blood has frequently been drawn from the arm, it has not in any case presented the buff-colored crust indicative of inflammation.

The unfortunate sufferer is at last either carried off by a convulsive fit, or is worn out by repeated paroxysms, and sinks completely exhausted. The duration of the disease varies from thirty hours to five or six days. The average period is two days.

HYSTERICAL OR MENTAL HYDROPHOBIA.

It is quite probable that now and then a person who has been bitten is frightened into hydrophobia. Reading on the subject always has a bad effect, even talking about it. It is not impossible that a person might die with the symptoms of hydrophobia from mere fright. I firmly believe that there have been such cases.

Treatment.—The real nature of hydrophobia is totally unknown, and we are equally ignorant of any method of treatment from which the least chance of success might be expected. Blood-letting mercury, tartar-emetie, opium, arsenic, ammonia, tobacco, and a variety of other means, have been tried in vain ; in fact, there is not a well-authenticated case on record of any one having recovered from this disease.

Opium, in large doses, and chloroform, are the only remedies that have been found to produce any very decided effect in alleviating the terrible suffering which the miserable patient is destined to undergo.

Various plans have been adopted to prevent the saliva of a rabid animal from acting on the system, but the one on which the greatest reliance ought to be placed is to cut out the bitten part as soon as possible after the injury has been inflicted ; this, though a harsh means, is the most effectual hitherto tried ; but in order to insure success the operation must be effectually performed by the removal of every part which the dog's teeth may have touched. If any delay be likely to occur before the part can be removed, the individual should suck the saliva from the wound (if it has been inflicted on a part which renders this step practicable), and then immediately spit out the fluid he has withdrawn and carefully wash his mouth. This simple method of preventing the absorption of the morbid saliva naturally occurs to every one ; a mother never hesitates to put it in practice when her child is the sufferer, and many lives have been saved in consequence. We do not believe that any risk is incurred from adopting this measure, provided the mouth be repeatedly and carefully washed ; and the best thing for this purpose is a *saturated solution of alum* ; or salt and water may be used if alum be not at hand. The wound should also be well washed with the solution of alum, which may have the effect of preventing the poisonous saliva from contaminating the system, since we know that it possesses the property of destroying all morbid animal secretions. *Cauterization* with the solid stick of nitrate of silver, or with a white-hot iron, or electrolysis with a needle plunged into the wound are all worthy of trial.

Another simple mode of removing the poisonous saliva is by cupping, by means of a common wine-glass. This is a very easy process ; in order to exhaust the air, a piece of paper, moistened with spirit, and then lighted, is to be put into the glass, which is to be immediately applied over the part. These means, however, are not intended to exclude the use of the knife or burning the part with caustic, and therefore surgical assistance should be procured as soon as possible.

As we cannot cure the unfortunate hydrophobic patient, we should do the next best thing, and relieve his horrible agonies.

This we can do—

1. By inhalations of ether or chloroform.

2. By hypodermic injections of morphine or atropine (see Hypodermic Injections), or by large doses of opium internally.

In concluding this subject it may not be considered unnecessary to give a short description of the appearance which a dog presents when in a rabid state. He at first appears dull and sullen, avoids the light, prefers solitude, and has an aversion to food ; he snarls at the sight of a stranger, and may endeavor to bite him. He recognizes his master, and fawns as usual on those whom he knows, but is peevish, irritable, and apt to snap or bite suddenly without any provocation. After two or three days, if not confined, he quits his master's house, and runs along panting, with the tongue hanging from his mouth. His ears and tail droop, he appears much dejected, and his eyes are red and watery. He stops occasionally and gnaws at stones, bits of wood, etc., and attempts to bite every person he meets, but does not go out of his way to attack any one. He does not bark, but makes a peculiar growling noise, almost amounting to howling. Foam appears at his mouth, he is seized from time to time with sudden fits of fury, and bites every animal within his reach, particularly his own species. Two or three days after leaving home he is observed to be palsied behind, and to carry his head near to the ground ; he becomes at last completely exhausted, and dies. (See Poisonous Bites, Plate 9.)

Hydrophobia is not peculiar to any country. It is found in Europe, America, and Asia. It is found in all climates—amid the cold of the north and the heat of the tropics. It prevails at all seasons of the year. *The popular idea that it is more frequent in the heat of summer and in dog-days, is erroneous.* It has been shown that it occurs with nearly equal frequency in winter, spring, summer, and autumn.

HYPOCHONDRIA, VAPORS, OR LOW SPIRITS.—

(Melancholia.)

It presents itself under such a variety of forms, and the symptoms vary so much in different individuals, that many pages might be filled in attempting to describe it. The opinions of physicians also differ widely with regard to the source and true nature of hypochondria.

Symptoms.—A hypochondriacal patient often says that he is tired of life, and wishes that death would come to relieve him from his suffering ; and yet his conduct shows how very desirous he is of living, and how much he dreads death. He consults every medical man of his neighborhood, and is perhaps in communication with several of them at the same time ; but not believing that they pay sufficient attention to the Protean forms which his disorder assumes he never follows out the treatment prescribed by any of them. He reads every medical book which comes in his way, and leaves no description of fashionable quackery untried. He has recourse to *animal magnetism*, and as long as he is impressed with the idea that it will be the means of cure, he fancies that it does him good ; but getting tired of this, he consults a variety of schools, and successively abandons them. A variety of empiric remedies are resorted to ; but, instead of finding a specific for his numerous ailments, his digestive organs become materially affected from the quantity of medicine he has taken. The healthy appearance which he has probably hitherto retained now begins to leave him, and the consequences might soon be of a serious nature, unless he sees the necessity of following the advice of the celebrated Italian physician Baglivi. “Although at first sight,” he says, “hypochondriasis may appear a destructive and incurable disease, yet the patients may generally be very easily cured, not by taking great quantities of medicine, but by the cheerful discourse of friends, the innocent pleasures of a country life, frequent exercise on horseback, and by following the mode of living pointed out by a wise physician.”

Treatment.—Concerning hypochondria, these facts are worthy of consideration :

1. It is usually a symptom of some disorder of the central nervous system or of the sympathetic nerve ; it is frequently the premonition of actual insanity.

2. It may be brought on by any cause that injures the nervous system, but it may and often does depend on some disorder of the liver, as has been popularly believed.

The persons most subject to this disease are those *who, after*

working and worrying with their brains too hard and too long in the pursuit of wealth, suddenly retire and do nothing.

3. It is really a disease—is to be treated as a disease, and is as curable and as relievable as the majority of nervous diseases.

(For treatment see Neurasthenia.)

The disease is undoubtedly increasing in frequency.

HYPODERMIC OR SUBCUTANEOUS INJECTIONS

The accompanying cut represents a syringe that is now much used for the purpose of injecting remedies beneath the skin. This method of treating neuralgia and a number of other diseases is becoming very popular with the profession.

When morphine and atropine are thus injected beneath the skin, pain is usually relieved almost instantly.

There is no remedy to be compared with this for the temporary relief of pain. When frequently repeated, its effects are sometimes permanent.

Fatal accidents have sometimes happened from the use of hypodermic injections, but when *cautiously* and *skilfully* used they are harmless. As a general rule they should be employed only by physicians, but nurses and those who are not physicians can be instructed in the use of them in cases when the physician cannot remain in constant attendance. Sea-captains should understand the use of the hypodermic syringe. The syringes that are mostly used are of glass and hold about half a fluid drachm, and are graduated for drops. "In operating, draw the skin tense with the forefinger and thumb of the left hand, and pass the point of the tube quickly and steadily through it. Then push in, not rapidly, the desired amount of the fluid." Avoid the veins. One of the best places for injection is the upper and outer surface of the arm.

Great caution should be used not to inject *too large a quantity*.

On the advantages of this method of using medicines, Dr. C. E. Brown-Séquard thus remarks :

"This method of administering remedies, which is now very extensively used, has very great advantages over most of the other methods. I will only point out a few of these advantages. 1. Rapidity of effect. 2. Certainty that the remedy will not run the risk of being decomposed by food, secretions, or feces, as may be the case in the digestive tube. 3. Possibility of introducing safely into the circulatory system a much larger dose than by other methods. This last advantage is the principal one in the use of

the hypodermic method against neuralgia. This explains how neuralgic patients who had taken apparently large doses of narcotics by the mouth, with no permanent and even no temporary marked benefit, are sometimes completely cured by one or by a few hypodermic injections of narcotics." Although *narcotics* have been chiefly used hypodermically, yet other remedies, such as strychnine, quinine, have been used in the same way.

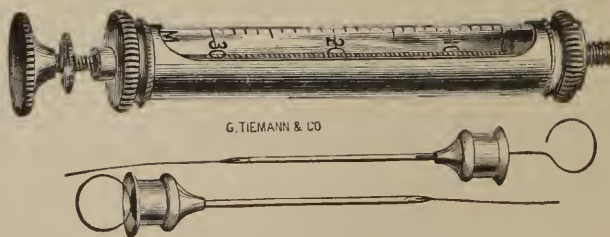
Doses of medicine for hypodermic injections.



Method of injecting the Arm.



Hard Rubber Hypodermic Syringes.



Covered Barrel Hypodermic Syringe.

Sulphate of morphia, $\frac{1}{8}$ to $\frac{1}{4}$ of a grain (.008 to .016 gram),
 Sulphate of atropia, $\frac{1}{100}$ to $\frac{1}{50}$ of a grain (.0006 to .0013 gram.)

As a rule, about *one third* the ordinary dose of any medicine is used for hypodermic purposes. Morphine and atropine may be combined.

HYSTERICIS—HYSTERIA.

Hysteria has in many respects a close resemblance to epilepsy, and is supposed by some physicians to be a species of that disease. Several well-marked symptoms, however, distinguish these disorders from each other. In hysteria the face is not nearly so much distorted, nor does it ever acquire a livid color, as in epilepsy ; and in the former affection the patient generally hears what is said to her and seldom becomes entirely insensible ; froth does not appear at the mouth, there is no grinding of the teeth, nor is the tongue ever injured ; the breathing is not stertorous or snoring, and the hands remain open.

Symptoms.—A paroxysm or fit of hysteria is generally announced by headache, restlessness, cramps, coldness of the feet, yawning, and sometimes by immoderate fits of laughing, or crying and laughter alternately. The patient experiences a peculiar sensation, as if a ball were moving about with a rumbling noise in the belly. This, after some time rises, to the stomach, and thence to the throat, where it fixes itself, causing a most intolerable feeling of choking or strangulation. The breathing now becomes hurried, the heart palpitates ; giddiness, sickness at stomach, and dimness of sight follow. The patient then falls down, seized with convulsions ; she screams, perhaps tears her hair, and beats her breast ; her body is writhed to and fro, and the limbs assume a variety of postures. The convulsive movements are not constant ; a succession of fits take place, with longer or shorter intervals between them. Sometimes the urine is discharged involuntarily ; and during the absence of the convulsions the patient laughs wildly, cries, or screams ; and sometimes a distressing hiccup comes on. The abdominal muscles may be irregularly contracted, or the belly may be drawn inwards towards the spine, or is tense, and distended with air ; the veins of the neck are greatly distended, and the carotid arteries beat with unusual violence. In delicate females the face is pale and flushed alternately ; in the more robust it is flushed, and appears fuller than usual. The patient having remained in this state during a longer or shorter period, often for twenty-four hours, and sometimes considerably longer, at length begins to recover gradually. The spasms abate ; wind is freely discharged from the stomach ; there is frequent sighing or sobbing ; she complains of severe headache, with a feeling of soreness over the whole body and limbs, and lies in a languid and listless state for some time before she is able to rise. The recovery in some cases is sudden,

and accompanied with a loud fit of laughter or immoderate crying ; and there is often a copious discharge of pale urine.

This disease imitates so many others, and assumes such a variety of symptoms, that a concise description fails in conveying an adequate idea of it ; but we do not see any necessity for giving a minute account of all its various forms and relations, because, however formidable in appearance, it is never attended with danger.

A point, however, of considerable importance with regard to hysteria is the difficulty of distinguishing it from other diseases ; indeed, it has such a near resemblance in many respects to hypochondria in males, that medical men are often embarrassed by the variety of symptoms which occur in hysterical females ; and in many cases considerable experience and judgment are required in order to be able to discriminate between functional or even organic disorders, and the endless variety of forms which this affection presents. An hysterical female sometimes complains of great pain and tenderness of the belly, and even screams if it be touched ; she may have headache at the same time, and remain in bed during several days ; but the pulse continues tranquil, and the skin is not hotter than natural. Many girls, however, have been bled repeatedly while in this state, under the idea that some inflammatory action was going on.

Pain about the region of the heart, accompanied with palpitations and occasional fainting fits, constitute another form which hysteria assumes, and may at first lead any one ignorant of the use of the stethoscope to suppose that organic disease of the heart existed.

Causes.—Females from fifteen to thirty years of age are most liable to hysteria, and it is generally observed in those of a highly nervous temperament, with spare habit of body ; or in plethoric and fat persons with soft and relaxed muscles, who are subject to irregularities of the menstrual discharge.

The most common exciting causes are disappointed love, jealousy, undue excitement, ungratified desires, and all powerful mental emotions which act strongly on the nervous system, and tend to induce disorders of menstruation. Hysteria, in fact, depends almost entirely on the education, social position in life, mode of living, and moral training of females ; many, from having been over-indulged when children, become irritable, wayward, capricious, and, in a word, are so self-willed that the slightest disappointment or opposition brings on a paroxysm. Sydenham remarked long ago that, “ Upon the least occasion they indulge terror, anger, jealousy, distrust, and other hateful passions ; and abhor joy, and hope, and cheerfulness, which, if they accidentally

arise, as they seldom do, quickly fly away, and yet disturb the mind as much as the depressing passions do ; so that they observe no mean in any thing, and are constant only to inconstancy. They love the same persons extravagantly at one time, and soon after hate them without a cause ; this instant they propose doing one thing, and the next change their mind, and enter upon something contrary to it, but without finding it. So unsettled are their minds that they are never at rest." People in general are not much inclined to sympathize with hysterical females, however formidable or alarming the fits may appear, because it is believed that this affection is in a great measure under their own control, and, in fact, in nine cases out of ten the paroxysm is the result of a fit of bad temper, or of some excitement which could not have arisen in a well-regulated mind, but when the disease is fully upon the sufferers it is beyond their control.

Strong religious feeling, acting on delicate or weak-minded females, is another fruitful source of hysteria ; and in such cases it is readily communicated from imitation and sympathy.

Treatment.—Two indications are to be attended to in the treatment of hysteria ; the first is to shorten or moderate the violence of the paroxysm, the other to prevent the return of the fits.

When the fit is slight, the application of *cold water* or *ice* (in a cloth or towel) to the head and neck, putting salt in the mouth, and *sal volatile*, or *aromatic vinegar* to the nostrils, are the means commonly put in practice, and sometimes with advantage ; but, at all events, in mild cases the fit may be allowed with perfect safety to run its course. When the paroxysm is severe the first thing to be done is to prevent the patient from receiving injury by the violence of her struggles. She should be placed in bed in a well-aired apartment, her shoulders ought to be raised, and her dress loosened. If she be capable of swallowing, a teacupful of cold water or the following draught may be given :

Camphor mixture, 2 ounces (64 grams),
Sal volatile (aromatic spirit of ammonia), a teaspoonful (5 grams).

Mix.

Or a teaspoonful of *ether* may be given in a little cold water. Should the face be flushed and the head hot, cloths moistened with ether are to be placed on the forehead, or wet towels or pieces of linen may be applied to the same part.

Treatment during the intervals.—In order to effect a radical cure of this affection, attention must be paid to the general health

of the patient, and to the state of the digestive organs and womb. If the habit of body be full and plethoric, low diet and exercise are proper ; but if the patient be delicate and her stomach debilitated, tonic remedies, such as small and repeated doses of *quinine*, *arsenic*, and *preparations of iron and zinc* (see Zinc Combination) are the most suitable remedies. *Malt* and *cod-liver oil* are also excellent.

Should the disease be connected, which it very frequently is, with disorders of menstruation, I must refer the reader to a subsequent part of the work. (See Women and Menstruation, Diseases of ; and Neurasthenia.)

Chloride of gold or sodium, 5 grains (.32 gram),
 Gum trajacanth, 1 drachm (4 grams),
 Sugar, as much as is necessary to make fifty pills.

DOSE.—One after each meal, and gradually increase to eight pills daily.

Valerian, castor, assafoetida, galbanum, and other remedies termed antispasmodic, are in very general use in the treatment of hysteria, but I cannot say that we have ever known any permanent benefit derived from them ; and we believe that medicine, to have any decided effect in this disorder, must be directed towards improving the state of the digestive and uterine functions.

Hysteria may attack any part or organ of the body, and resemble organic disease. Like hypochondria, it is really a disease, and is to be treated accordingly. Moral influence can do much, but it cannot do every thing. It is a nervous disease, and is to be managed on the same general principles as other nervous diseases.

It should always be remembered that hysteria is to woman what hypochondria is to man. Both are really diseases. Both are probably symptoms of some disturbance of the central nervous system. Both are increasing in frequency. Both are often premonitions of actual insanity. Both may occur at any time of life after puberty. Both diseases may often be relieved and cured by appropriate treatment.

(For principles and details of treatment, see Treatment of Nervous Diseases, and especially of Neurasthenia.)

HYSTERO-EPILEPSY.

A kind of combination of hysteria and epilepsy. The patient may have hundreds of spasms daily. There are convulsions and

cries, but no stupor after the attacks. The patient comes at once out of the fit with a clear mind. There is usually tenderness of the ovaries ; and when the ovaries are firmly compressed the fit will often cease.

In some cases the patient assumes most remarkable positions during the attack. A very trifling exciting cause will induce the attack, which may come on every few moments.

(For treatment, see Hysteria and Neurasthenia.)

ICE-BAGS AND BAGS OF HOT WATER.

Dr. Chapman, of London, has introduced to the profession a method of treatment that consists in the application of rubber bags, filled with *ice* or *hot water*, to the spine. This method of treatment has been found to be quite successful in a variety of nervous diseases. They are recommended for *convulsions*, *neuralgia*, *sick headache*, *sea-sickness*, *epilepsy*, *St. Vitus's dance*, and a variety



ICE-BAGS.

of other affections. The bags for holding the ice are simply a matter of neatness and convenience. Ice wrapped in a cloth or towel serves our purpose very well. I have used this treatment successfully for sick headache, spinal irritation, and many other symptoms.

ILIAC PASSION — OBSTRUCTION OF BOWELS — INTUSSUSCEPTION.

Iliac passion, or Ileus, consists of excessive vomiting, with obstinate constipation of the bowels. This dangerous disease may com-

mence suddenly and terminate fatally in the course of four or five days ; but cases of this description are fortunately very rare.

Symptoms.—It usually commences with acute griping pain, obstinate constipation of the bowels, retraction of the navel, and the usual symptoms of severe colic, which not being relieved by any mode of treatment, a still more distressing state supervenes. The patient is racked with violent pain ; the belly becomes swollen, and tender to the touch ; the pulse is weak, small, and quick ; the thirst is urgent ; the face appears anxious and shrunk ; *fecal matter is vomited* ; cold sweats, hiccup, and frequent fainting fits follow, and death generally puts an end to the patient's misery. In some cases, acute pain is felt at a particular part of the abdomen, accompanied with heat of skin, quick pulse, thirst, and the ordinary symptoms of inflammation ; in others there are no symptoms of fever ; in the latter case life may be prolonged a considerable length of time.

Causes.—Ileus may arise from various causes, the principal of which are ruptures ; one portion of the bowels passing within another, and becoming entangled ; contraction, or stricture of the bowel ; obstruction from cancerous or other morbid growths ; bands formed by false membranes, strangulating or compressing a portion of gut ; paralysis, or torpor of the bowels, arising from hardened feces, impacted in some part of the intestinal canal ; or it may be a symptom of inflammation of the bowels.

Treatment.—In every case the first thing to be done is to ascertain whether or not the disease is the result of hernia or rupture. A hernial tumor is sometimes so small that the patient is ignorant of its existence, or may not consider it worthy of notice ; and females are often ashamed or unwilling to admit that they have any complaint of this nature. We ought not, therefore, to rest satisfied with the statement of the patient, but should examine the parts subject to rupture with the greatest care. The necessity of procuring the best professional assistance at an early stage of the disease, in order to avoid intense suffering and death, is absolute.

Another essential point to be attended to, before having recourse to any remedial means, is to ascertain whether or not the disease is accompanied by inflammation, the signs of which are, a constant, acute, and burning pain in the belly, which is distended, tense, hot, and acutely sensible to the slightest pressure ; urgent thirst, and high-colored urine. In this case, instead of giving opiates and strong purgatives, which would soon destroy the patient, recourse must be had to general and local blood-letting,

and the means usually adopted to subdue inflammation of the bowels, of which the ileus may be only a symptom ; and will then, of course, be removed along with the inflammation.

If the disease do not depend on hernia, and if no inflammatory symptoms be present, it then becomes advisable to administer purgatives and opiates.

Treatment.—1. *Cathartics.*—*Castor oil* may be given in large doses, and may be injected into the bowels. Croton oil, a drop or two on the tongue, may be resorted to. We may inject into the bowels *Epsom salts* with warm water and molasses, and in large quantities. *Local faradization* may be used with a powerful current.

If all these measures fail, we have reason to suspect that the bowels are obstructed, and should next try—

2. Opium in doses of one grain or less every half hour to relieve the pain, and if possible relax the bowels. Together with the opium try warm hip-baths, and injections of warm water in large quantities. Physicians sometimes use long tubes in such cases, and push them as far as possible up the bowels.

3. Inject air by air bladders or by large bellows. It is claimed that lives have been saved by this method of treatment.

IMPETIGO.

Symptoms.—An eruption of discrete flat pustules, which dry into thick yellowish or brownish crusts. It occurs chiefly among children, and is a mild affection.

Treatment.—The crusts should be softened by applying a light poultice or a piece of flannel soaked in oil, when they can be readily removed, leaving a reddened surface which tends to assume a healthy condition.

IMPETIGO CONTAGIOSA.

This is an affection resembling the last named, but is contagious. In children its onset is accompanied by febrile symptoms, and straw-colored crusts rapidly form, often having a central depression like a vaccine crust.

Treatment.—The same as for impetigo.

INANITION OR MARASMUS.

Bad nutrition. Children that are badly fed sometimes die of

this disorder. The child loses flesh and dies of exhaustion. (See Marasmus.)

INEBRIETY—DIPSOMANIA.

The habit of drinking to intoxication is partly a vice, and partly a disease. Drunkenness, as a vice, is very old indeed ; it seems to have always existed wherever the materials were accessible. Drunkenness, as a disease, *inebriety*, has been recognized but recently, and it appears to be especially and increasingly frequent in this country.

He who drinks to intoxication for the fun of it, for the sake of the pleasure it gives, or to drive dull care away, is vicious. He who drinks because he cannot help drinking, who is borne on *against* his wishes and strivings by an *irresistible impulse*, is *diseased*. Drunkenness, as a vice, may, and often does, lead to drunkenness as a disease, and the two forms are frequently combined. Drunkenness, as a vice, may be, and often is, stopped by signing a pledge of abstinence, which the victim sometimes finds no serious difficulty in keeping, so long as he is not surrounded by evil companions. Drunkenness, as a disease, is rarely cured by signing the pledge, or by so-called moral measures of any kind. With such persons life is a constant pledge ; they wish to be delivered from their suffering as much as the dyspeptic patient wishes to be delivered from his indigestion, or the neuralgic patient of his pain. The dyspeptic and neuralgic sufferer may pledge himself to abstain from eating those articles and exposing himself to those influences, as cold and dampness, that experience shows to be harmful ; but, in addition, positive remedial measures may be needed for the accomplishment of a cure. Likewise the inebriate may pledge himself to abstain from alcoholic liquors, and may put himself into a position where he cannot get them, but to this negative treatment should often be added positive medication, if we expect a permanent or even temporary cure. In a word, inebriety is *a neurosis—a functional disease of the nervous system*—and should be treated on the same principles as other and allied nervous diseases.

There have been three difficulties in the way of recognizing inebriety as a disease. First, the difficulty of distinguishing between the vice of drunkenness, which is not necessarily a disease more than any other vice, as swearing, or lying, or licentiousness ; secondly, the difficulty of finding any exact analogy in other nervous diseases, and thirdly, the fact that inebriates are in other respects so well, apparently, and so strong.

The first difficulty is not peculiar to the study of inebriety ; it confronts us whenever we try to solve the mysteries of insanity, of hysteria, or of epilepsy. The differential diagnosis between eccentricity, a physiological state, and insanity, a pathological state, is sometimes very difficult indeed.

The difficulty is intensified by the fact that eccentricity so often runs into insanity ; the brain that is peculiar or unusual, but healthy, becomes diseased, insanity takes the place of eccentricity, the general nature of the symptoms being however but slightly changed.

The indulgence of eccentricities frequently leads to the disease insanity. The man who is *organically* but healthfully passionate, avaricious, or mean, may by over-indulgence become *morbidly* passionate, avaricious, and mean. Just so indulgence in drink as a vice leads to indulgence in drink as a disease ; the intemperate man becomes an inebriate.

The second difficulty—the want of an exact analogue to inebriety—is, for the majority of those who think on these themes, quite serious. Disease, to the popular mind, means something tangible, or at least accessible to some of the senses, and resulting usually from some external cause.

The popular mind understands with ease that small-pox, typhoid fever, and ague are diseases, although the poisons that cause these disorders are not revealed to the senses, because the symptoms are seen as well as experienced by the sufferer ; it is not necessary to depend on the statements of the patient ; we know that he is sick, even if he insists that he is quite well. Inebriety, on the other hand, is purely *subjective*, and only exhibits itself by drinking, which is a habit common to thousands who are not inebriates, but are simply drunkards. One need not wonder at the slowness with which inebriety has taken its position as a disease when we consider that besides being a subjective malady like neuralgia, neurasthenia, and hypochondriasis, it is also obscured by being confounded with the habit of drunkenness, which in its external manifestation it so closely resembles. The superficial observer forsooth sees no difference between a drunkard and an inebriate, just as he sees no difference between a hypochondriac and a malingerer, between one who is really depressed in mind and one who only pretends or fancies that he is so.

Approximate analogues to inebriety may be found in various other mental disorders. Take the passion of anger, which is a normal faculty, and indicative of health rather than of disease. It may, however, become a disease. Morbid anger is sometimes

one of the first, perhaps the very first symptom of insanity ; and yet the differential diagnosis of morbid anger from healthy anger may be as hard as the differential diagnosis of eccentricity and insanity in general, or of drunkenness and inebriety. Over-indulgence in the healthy normal passion of anger may invite and prepare the way for the morbid passion of anger ; the brain over-used too long in a certain function becomes diseased in that special function ; over-indulgence of anger leads to morbid anger, over-indulgence of love of acquisition leads to morbid avarice, over-indulgence in drinking alcohol leads to alcoholic inebriety, over-indulgence in opium or chloral leads to opium or chloral mania, the chief difference between inebriety and chloral and opium mania on the one hand, and morbid anger and avarice on the other, being that the former is created by indulgence in the use of a substance, as alcohol, opium, and chloral that appeals to the senses, whereas anger and avarice are purely psychological, and, like all the great forces of nature, can only be studied through their effects.

The third difficulty in the way of recognizing inebriety as a disease, is the fact that it exists in persons who are otherwise apparently perfectly well. Inebriates are frequently so strong, and even sturdy in appearance, so free, oftentimes, from other functional diseases, even, that their friends are slow to believe their weakness in this particular.

Here, also, recur to analogy. Many other functional nervous diseases besides inebriety are consistent with apparent and real health and strength in other respects. A man may suffer every week from violent sick headaches, may have annual attacks of hay fever, may be tortured with neuralgia, may experience the deepest horrors of hypochondriasis, and even insanity in certain phases, and all the while increase in flesh and improve in complexion, and may be capable of great muscular if not mental endurance. Cases illustrating this I have seen ever since I began practice. Patients of this kind sometimes suffer more from want of sympathy than from this disease. Hysterical women, and men also—and some of the worst cases of hysteria are in men—grow fatter and stouter as their symptoms grow worse. I am persuaded that in some cases increase in strength and real vigor in other directions is one of the symptoms of increasing nervous disease, as though the morbid activity were concentrated in some one function, leaving other functions free to operate healthfully and vigorously. One day there came into my office an inebriate who told me that he had been walking over forty miles consecutively, without any thing to eat, and yet he was but little wearied.

Besides these three general difficulties, there are three special difficulties in the way of recognizing inebriety as a disease, and of satisfactorily studying it.

1. It is not seen to any extent in ordinary hospitals and public institutions. Our hospitals are filled with drunkards—those who are victims of the vice of drinking—but rarely admit inebriates—those who suffer from the disease of drinking. The class of people who enter hospitals is not the class from which, as a rule, inebriates come. The peasantry of foreign countries, and negroes and Indians, are good materials for drunkards, but do not often become inebriates, for inebriety is usually the disease of refinement, of a fine organization, of an indoor life, of brain-workers, of civilization.

2. Inebriety is mostly, although not entirely or distinctively, an American disease. By this I mean that it is more common in the United States—particularly in the northern and eastern States—than in any European country, not even excepting England. The ancient world knew very much of drunkenness, but very little of inebriety—a disease first observed in modern times, and in this country, and which, at the present time, is more abundant here than in any other part of the world.

This group of ten diseases to which inebriety belongs, and which includes cerebral irritation (cerebrasthenia), spinal irritation (myelasthenia), general neuralgia, sick headache, physical hysteria, hay fever, pathophobia (hypochondriasis) in its different varieties, neurasthenia or nervous exhaustion, and nervous dyspepsia, is least common in Germany, somewhat more common in France, decidedly more abundant in England; but their chosen home is the northern and eastern parts of the United States, where there are more of these diseases than in all the rest of the world beside. The frequency of these diseases in this country, and particularly in this section of it, is the manifold result of the extremes of heat and cold, degrees of the air, our institutions and mode of life.

3. A third special difficulty in the way of recognizing inebriety as a disease is that it cannot be studied exclusively by the senses. To master functional nervous disorders, we must use deduction as well as induction—the reason even more than the eye and ear. We cannot see or hear or touch or taste or smell the pathology of inebriety, nor with the aid of a microscope or spectroscope probably could we solve the problem of its nature. Only by reasoning from general principles already established, and by analogy, with the aid, it is true, of observation of cases, can we reach the heart of this or of any kindred affection. The successful study of subjects of this nature requires the philosophic mind. Inebriety is a disease

of the brain, and it takes brain to comprehend brain. There are many diseases and various states of the system that are best studied through the eye, but the eye alone, with all its aids, would teach us but little of inebriety.

Understanding then that *inebriety* is a *disease*—a *neurosis* or *functional disease* of the *nervous system*—our next and most natural inquiry is, what is the precise seat of the disease? On what part of the nervous system does the injury done by alcohol fall so as to make a man an inebriate?

My own view is that in inebriety the *centre in the brain that presides over the appetite is the part specially diseased*.

Inebriety has four characteristics that are common to it with the other neuroses of which I have spoken—the *automatism* of its symptoms, *periodicity*, *transmissibility*, and *relapsibility*.

The symptom of drinking to excess that belongs to inebriety is as much beyond the control of the sufferer, oftentimes, as neuralgia or sick headache; whatever responsibility attaches itself to the patient must be referred to a time *prior to the outbreak of the disease*, when exposure to the exciting causes might perhaps have been avoided, or when the early temptation might have been successfully resisted. Dr. Crothers, of Hartford, has given me the detail, of four cases of inebriety where the malady was excited by breathing the air of the seaside; whenever they came near the sea coast, as at Long Branch or Coney Island, or when they crossed the ocean, the symptoms of *headache*, *debility*, *depression*, and morbid craving for alcohol came upon them with irresistible power. We may blame a man for exposing himself to danger of taking cold, but no one blames a man affected with bronchitis for coughing. A boy struggling in the middle of a deep river, borne down by the current, may be blamed for not having learned to swim when he had opportunity, or for going beyond his depth, or for venturing too near the edge of the bank against parental injunction; but surely he cannot be blamed for his inability to keep his head at the surface, or for not resisting with success the force of the stream. *Just here is the responsibility of inebriates, so far as they can be said to be responsible for the disease from which they suffer*. There are some inebriates who directly inherit the tendency to their disease, just as they might inherit the tendency to insanity, or epilepsy, or neuralgia, or hay-fever, and who are no more and no less responsible in one case than in the other.

One important result of researches in the physiology and pathology of the brain is to limit responsibility, or rather to define its limitations, and to reduce the causes for blame and for praise of

human actions to a scientific basis. A type and test of this relation of disease to responsibility is found in inebriety.

The second characteristic of inebriety—*periodicity*—is common not only to nervous but to many other forms of disease.

All nature moves in rhythm. Health as well as disease has its tides : its flowings and refluxes ; its lulls before the storms. All the great forces are, or appear to be, results of wave motion. Under this universal law inebriety takes its own proper place. All inebriates are not periodical drinkers, but many of them are, and in those who seem to drink irregularly there may be, and probably is, an irregular rhythm in their cravings that is beyond ready analysis.

In regard to the *transmissibility* of inebriety from parents to offspring through different branches and generations, and its correlation with insanity, epilepsy, and other nervous diseases, there is far less known, in spite of all that has been written on the subject, than is needed to be known. It is not the disease, it is the *tendency to the disease* that is inherited ; and this tendency is not transmitted to all the children, but is liable to be transmitted to some of them, and one form of nervous disease, as inebriety, in one or both parents, may, in some of the children or more remote descendants, reappear as epilepsy or insanity, or hypochondriasis. There is a general tendency to disease of the nervous system developed and fostered under our modern civilization and institutions which I call the *nervous diathesis*, and which subdivides itself into various phases of nervous disease, such as neuralgia, sick headache, spinal and cerebral irritation, hysteria, and hypochondriasis, as the hand branches out into a thumb and fingers.

Inebriety, like hay-fever and sick headache, may, however, occur in persons who are free from almost any other morbid symptom. I have seen inebriates whose health I envied, all their tendency to nervous disorder seemed to concentrate in this one disorder.

The *relapsibility* of functional nervous diseases is an universal characteristic. Even those cases that ultimately and permanently recover do so usually through a series of slips, and misses, and pull backs. Rarely or never does one get rapidly and consistently well of any of these affections I have named without relapses, or, at least, pauses that are equivalent to relapses. Easily made better, easily made worse, can be said of all these troubles. The objection every day made against inebriate asylums that many of their discharged inmates fall back into their old habits might have some force if it did not apply to every other form of functional disease, however and by whomsoever treated.

Inebriates, to say the least, do as well as patients with any of the class or family of disorders to which it belongs. The chances for perfect and permanent recovery in insanity—taking the cases as they appear—is but one in ten.

Treatment.—The treatment of inebriety, as suggested by its nature, has been explained. Functional nervous diseases of all kinds are to be treated on two general principles :

First. *Avoidance of exciting causes.*

Secondly. *Sedatives and tonics.*

In other words, both subjective and objective treatment must be used. The exciting causes of inebriety are alcohol, and any nerve-exhausting influences, among which are especially prominent, bereavement, business reverses, disappointments in plans of love or ambition, or sudden and violent surprises of fortune. The powerful perturbations which these influences excite in the sensitive brain may arouse the tendency to inebriety where it has existed latent for years, and may aggravate it when already in activity, and the desire for drinking thus excited is heightened with each indulgence, and increases that desire. It is like the itching that attends many diseases of the skin, which is made worse, not better, by scratching. For a moment scratching relieves, but ultimately increases the desire for more, which desire only disappears with the cure of the disease on which it depends.

The object of entering a home or asylum is to take away the exciting cause, alcohol, and at the same time, so far as possible, in matters so little under man's control, to relieve the brain of the effects of daily and exhausting worry. Inebriate patients go to an asylum for the same reason that hay-fever patients go to the mountains or the sea ; this class get out of the way of alcohol, the other of dust, pollen, heat, and other irritants which are to hay-fever what alcohol is to inebriety.

An exciting cause of inebriety not uncommon among women is the pain and sense of exhaustion with which uterine disease is attended. The exhaustion calls for some kind of relief, and temporary relief at least is given by alcoholic liquors, and in some cases permanent benefit is derived therefrom in these cases. As a means of relieving pain alcohol is one of the best at our command, it acts as an anesthetic, and when administered in sufficient doses will relieve even severe toothache and neuralgia. The temptation to use this agent for the exhausted and feeble is therefore very great, and unless care be taken the habit may lead to inebriety. Difficult menstruation presents the same temptation. In suggesting alcohol for chronic or recurring states, the danger of inebriety is always

to be considered by the physician and by the patient. In acute affections that are of comparatively short duration this danger is reduced to a minimum.

The sedatives and tonics for inebriety are substantially the same as those employed in other and allied nervous diseases, mainly these four :

1. Fat. 2. Phosphorus. 3. Strychnine. 4. Electricity.

It is now pretty generally allowed among neurologists that cod-liver oil is one of the very best of nerve tonics. It is especially adapted for the group of functional nervous diseases to which inebriety belongs. The objection to the taste is now fully met by the emulsion. *Nux vomica* can be added, as well as phosphoric acid. Fat is food for the brain, hence the fat of beef in moderate amounts, so as not to irritate the stomach, is to be recommended. Glycerine is also of value.

Nux vomica is a valuable tonic for those afflicted with opium mania, as Dr. J. B. Mattison has recently demonstrated ; it buoys them, so to speak, as they let go.

The sudden breaking away from habits of drinking, or opium using, may leave the system in a condition of debility that is met by *nux vomica* better perhaps than by any other single remedy.

Electricity, by the methods of *central galvanization* or *general faradization*, or perhaps the electric bath, is to be earnestly recommended in inebriety. Electricity is a sedative and a tonic, and may be used either alone or side by side with other sedatives and tonics. Electricity is now, and for some time has been, used in the insane asylums of Europe and America, and it would be used still more were it not for the want of a proper force of assistants. Results are obtained by it frequently that cannot be obtained by any other remedy. Indeed, the great treatment for inebriety, as for the family of nervous disorders to which it belongs, is electricity externally, and the cod-liver oil emulsion (containing phosphoric acid and *nux vomica*) internally. Our inebriate asylums are not as crowded as our insane asylums, and there is more leisure and opportunity for treatment by electricity, provided the assistants will make themselves familiar with the right methods of using it.

The effects of central galvanization and general faradization are to strengthen the appetite and digestion, induce sleep, and to calm the nervous system.

All inebriates will not equally respond to this sedative and tonic treatment ; those who are more or less reduced in health, who have lost somewhat of nerve force, as a result of their disease, are more

likely to be helped by cod-liver oil, electricity, phosphorus, and nux vomica, than those who are strong. The same law is observed in hay-fever, and various other diseases.

In respect to hygiene inebriates should live liberally ; good, sustaining food in abundance and variety. Food is the very best of tonics.

One of the effects of inebriety, or opium eating, or the use of tobacco, is to diminish the appetite for ordinary food, and, when the habit is broken, the appetite should be encouraged and indulged. The vice of our time and country is, with some exceptions, under-eating, not over-eating ; to one person who eats too much, I see hundreds who eat too little. We may repent of eating injurious things, or of eating at improper times ; but we rarely have reason to repent of eating too much. Gluttony among cultured people is a bygone vice, and one that inebriates, least of all, need to fear. Starvation is everywhere the one besetting sin of nervous invalids ; when I can get my patients to eat I know that they are getting better. Occupation, mental and physical, is of the highest moment in the treatment of inebriety. For some diseases there is no cure like the work cure. Occupation—either in money-making, or in professional life, or in acts of benevolence—is an adjunct to confinement in asylums, and sedative and tonic medication that should be systematically studied on the part of physicians, and carried out by inebriates themselves. Some who have leisure, and are not slaves to the need of daily toil, find useful and healthful and curative employment in trying to save their fellow-unfortunates. Organizations that are formed for this purpose in connection with some of our asylums are to be encouraged.

INFLUENZA.

A specific and epidemic fever that attacks particularly the mucous membrane of the nose, larynx, and bronchial tubes.

Symptoms.—Influenza, or epidemic catarrh, has generally been observed to commence suddenly, with chills or shivering, alternating with flushes of heat, loss of appetite, great lassitude, and debility. These symptoms are soon followed by pain and a sensation of weight in the forehead, sneezing, a copious discharge of thin acrid fluid from the nostrils, a sensation of rawness along the course of the windpipe, hoarseness, and dry cough. To these are conjoined anxiety and a feeling of oppression about the chest ; pain in the back and knees, and shooting pains in different parts of the

body and limbs ; quick and weak pulse, and moist tongue, covered with white mucus.

The abruptness of the attack, the extraordinary debility, the severe headache, accompanied with giddiness, and the flying pains in the back, knees, and various parts of the body, distinguish this affection from common catarrh. (See Cold in the Head and Bronchitis.)

The duration of influenza varies from three or four days to a fortnight ; but in aged and delicate people it frequently leaves considerable debility and susceptibility to cold for many months. It seldom continues longer in any place than six weeks, and generally, towards the termination of the epidemic, the symptoms are mild, and differ little from those of a common cold.

Treatment.—Influenza at the outset is to be treated like a common cold. (See Common Cold and Cold Powder.)

In addition to these measures, the patients often need tonics. *Quinine* is given with benefit ; sometimes the preparations of iron are of service. These tonics are not usually given at the commencement of the attack, but subsequently, after the system has become more or less exhausted. In this disease it is more necessary to have medical advice than in a common cold.

Sometimes when the epidemic prevails in any place, no amount of caution can prevent our taking it. Those who keep carefully at home and who never expose themselves are as much, if not more, liable to be attacked than those who move freely about in the open air. Sometimes hundreds are attacked almost simultaneously.

Daily ablution with cold water is strongly recommended by nearly all the best authors on these affections, and several distinguished medical men speak of the advantage which they have personally derived from it. Sir Astley Cooper makes the following observation with regard to this practice :

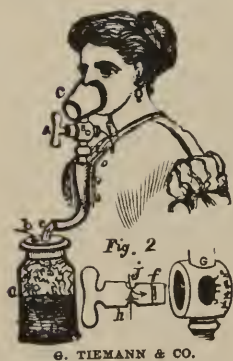
“The methods by which I preserve my own health are temperance, early rising, and sponging my body every morning with cold water immediately after getting out of bed, a practice which I have adopted for thirty years ; and though I go from the hot theatre into the squares of the hospital, in the severest winter nights, with merely silk stockings on my legs, yet I scarcely ever have a cold.”

INHALATIONS.

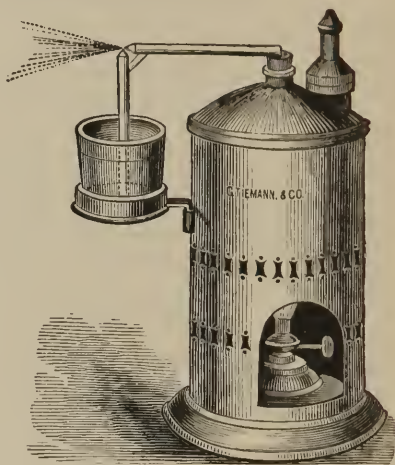
Of late years the practice of taking medicine by inhalation has been revived, and has now resumed some of its former popularity. Different styles of apparatus have recently been devised that enable

us to administer a large variety of medicines in the form of *cold or hot spray*.

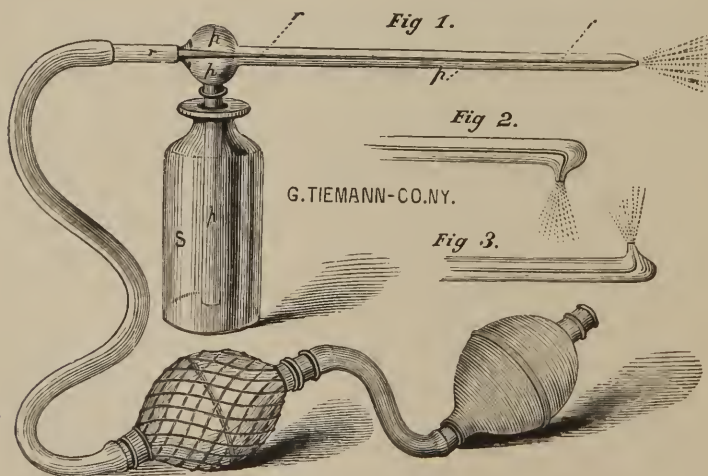
These are represented in the accompanying cuts.



GOODWILLIE'S INHALER.



STEAM ATOMIZER.



NEWMAN'S ATOMIZER.

There is no question that much good may be accomplished by inhalations ; but their importance has, I think, by some been over-estimated. They are of decided assistance in the treatment of diseases of the larynx and bronchial tubes. They afford relief in croup. They have been used as a means of relief in consumption.

Inhalation is to many a very agreeable mode of taking medicine.

Plate I.



CROTON OIL — *Croton Tiglium*.



GARLIC — *Allium Sativum*.



ST. JOHN'S WORT. — *Hypericum*



ICELAND MOSS. — *Lichen Islandica*



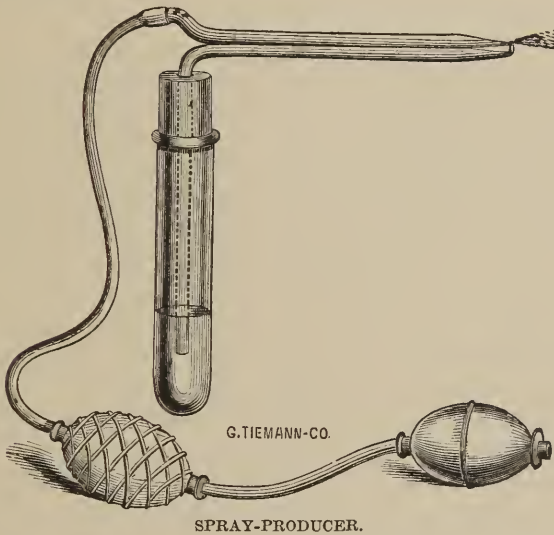
SE SARRAS. — *Oenothera*.



SCAMMONY. — *Convolvulus Scammonia*.

and on that account patients are sometimes inclined to overestimate their value—to form too extravagant hopes of their efficacy.

Charlatans have availed themselves of this popularity of inhalations, and have terribly deceived the people. They have professed to cure incurable diseases, have held out false hopes, and fleeced the unsuspecting.



The people should understand that inhalations are not panaceas ; that they are pleasant and effective *aids* to our other methods of treatment, in a certain class of diseases, and under judicious advice.

Doses of remedies for inhalation.

Tar water, 1 to 3 drachms (4 to 12 grams),
 Lugol's solution of iodine, 3 to 10 drops (.15 to .50 grams),
 Chlorate of potassa, 5 to 30 grains (.30 to 1.87 grams),
 Carbolic acid, 5 to 15 drops (.25 to .75 grams),
 Tannin, 10 to 25 grains (.62 to 1.56 grams),
 Alum, 10 to 15 grains (.62 to .9 gram),
 Muriate of ammonia, 10 to 30 grains (.62 to 1.87 grams),
 Laudanum, 5 to 20 drops (.25 to 1 gram),
 Nitrate of silver, 1 to 5 grains (.06 to .31 gram).

These medicines may be placed in a large or small quantity of water, according to the nature of the apparatus used. Patients should not use the more powerful substances, such as nitrate of silver and carbolic acid, without caution. The different forms of apparatus are usually accompanied by general instructions for their

use. It is always safe to make the first inhalations *short—say five or ten minutes*, according to substance used. After inhaling *hot spray*, it is well to rest a few moments before going into the open air, in order to avoid taking cold. This caution is not necessary after cold inhalations.

INSANITY.

Insanity is a disease of the brain attended with symptoms of diminished responsibility. It is a disease that is certainly on the increase.

Insanity receives various names, according to the special manner in which it is manifested. *Mania is general insanity.*

VARIETIES OF INSANITY.

Monomania.—Any one who is insane on some *one* subject is called a monomaniac.

Under this head there are many subdivisions.

Dipsomania (or methomania, or oinomania). (See Dipsomania, Alcoholism, and Inebriety.) Those who so lose their self-control that they cannot touch wine or other liquors without making beasts of themselves are frequently called *dipsomaniacs*. Very many of our drunkards, especially among the better classes of society, have diseased brains, and are really dipsomaniacs.

Pyromania.—Those who have an insane desire to set buildings on fire are called *pyromaniacs*. Some boys have been thus afflicted.

Kleptomania.—Those who cannot avoid stealing are called kleptomaniacs. Some of the best educated people in the land have been thus diseased. There have been ladies of abundant wealth and high social position who have had the habit of purloining all sorts of articles from the stores where they trade, and the houses of friends where they visited. There have been clergymen who have been unable to repress their tendencies to steal, notwithstanding all the unpleasant consequences that would result from exposure.

Dementia.—Dementia is the form of insanity where the mind gradually loses its force and the subject becomes stupid and apathetic, childish, and silly. It is a sequel oftentimes of other forms of insanity.

Melancholia.—In melancholia there is severe mental depression, gloomy forebodings. In some cases it appears to be an advanced stage of hypochondriasis.

General Paralysis of the Insane.—General Paresis.—The symptoms of this state are delusions of exaltation (the patient imagining himself a king or millionaire, or other personage of great importance), tremulousness of the upper lip, slow and trembling speech, etc. This form of insanity is most common in males between thirty and fifty years of age.

Homicidal Mania is an insane propensity to kill. There is a great prejudice against the use of this phrase, because it has sometimes been unfairly laid hold of to screen real criminals. There is no question that there is such a form of mania, and that those who suffer from it are not free moral agents. There is no definite *line where sanity ends and insanity begins*. The question of *insanity is simply a question of degree*. Each case must be studied by itself. There should be in every State a board of sworn commissioners, capable and honest experts in this department, to whom all doubtful cases should be referred. It should be for them to give evidence in criminal trials and to decide whether patients are or are not fit candidates for an asylum.

The present laws on this subject are a disgrace to our civilization. There are throughout the land a great number of insane people who are not fit for liberty. They are a nuisance to themselves and to all their friends. They turn their households into hells. Many of them are liable at any time to commit some terrible offence against peace and order. They are not free moral agents; their brains are diseased. They should be placed under some form of restraint. It is not always necessary to place such patients in an asylum. Insanity is a malady of degrees, and the restraint of the insane should be a matter of degree.

Under the present laws those who are so unfortunate as to have insane relatives are oftentimes obliged to endure their miseries until death brings relief. If they attempt to place their insane fathers or mothers, or brothers or sisters, or other relatives, under restraint, they are very apt to excite odium against themselves, especially if the relatives happen to be very aged and wealthy. On the other hand, there are opportunities under our laws for unscrupulous parties to imprison perfectly sane persons and get control of their property and affairs. This, however, is done but rarely.

The remedy for this evil is to have in every State a sworn and able commission, who shall at least be as much above reproach as our judges, whose office it shall be to decide such cases.

Treatment.—Every case of actual or of suspected insanity must be treated by itself. In all cases the best of medical advice

should be obtained. Only those who are skilled in the study of disease can judge whether or not separation and confinement are necessary.

In these days lunatics are usually treated kindly. They are allowed all the liberty and all the favors consistent with their own welfare and the welfare of society.

I need not say that the great majority of those who are in the milder and incipient stages of insanity—as I have described them—need no confinement at all. They are about us on every hand, and mingle with success in the various activities of life. It is only when insanity becomes violent, when it positively disturbs society, when it unfits one for the duties of life, that it must be treated by separation.

These mild and incipient stages must be treated just like nervous diseases in general. (See Treatment of Nervous Diseases.)

But in those cases where medical advice adjudges that separation is necessary, the friends of patients should not hesitate. Much of the prejudice against our modern asylums is unfounded. In the main, with occasional exceptions, the patients are treated with all possible kindness and consideration, and the results of the treatment are as satisfactory as can be expected.

It is a mistake to suppose that insane patients never perfectly recover. There is always hope of those who are young. After forty or fifty the chances of recovery diminish with the age. Some of the best and greatest men that the world has ever seen have been at some period of their lives insane.

INTERMITTENT FEVER. (See Fever and Ague.)

INVERSION OF THE WOMB. (See Women, Diseases of.)

ITCH—(*Scabies*).

The itch is a parasitic disease. An insect called the *acarus*, or itch mite, burrows into the skin of the hands and other parts of the body and provokes an intolerable itching. (See Plate VIII.) The scratching which follows, as a matter of course increases the irritation of the skin and provokes an eruption.

Causes.—The itch is generally contracted by sleeping with one already affected, as it is only at night, when warm in bed, that the *acari* crawl out upon the surface of the skin. Boys at school, who clasp hands for a long time in playing certain games may transmit the disease from one to another, but physicians in holding the hands



SALT RHEUM (*Eczema Palmare*)

ITCH (*Scabies*)

From Photographs, of Skin Diseases taken from Life under the direction of Geo. Henry Fox, M.D.
E.B. TREAT, N.Y. PUBLISHER.

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of itch patients for a few minutes never run any risk of contracting it.

The eruption, consisting of pustules and scratch-marks, generally begins upon the hands, especially between the fingers and on the wrists. It affects the abdomen and thighs, the ankles, and sometimes covers the greater part of the body, leaving the head, however, free. In women the breast is a favorite field for the exercise of the finger nails.

The seven years' itch, of which so much has been said, is a myth. The disease, when recognized, can be cured in as many hours in some cases, and nearly always in as many days, if proper means are employed.

Treatment.—A prolonged warm bath softens the outer layer of skin, a thorough friction of the affected parts with soft soap uncovers the hiding-places of the acari and the inunction of sulphur ointment effects their destruction. This must be repeated daily or nightly until a complete cure is attained.

When the hands or other parts are inflamed, sulphur ointment must be used with caution, lest it aggravate the existing eruption. In infants the balsam of Peru is a preferable application, as it is less irritating than sulphur.

Since the itch is a purely local affection there is no necessity for administering the old-fashioned doses of sulphur and molasses, which found such favor in the eyes of the preceding generation.

Bakers', bricklayers', and grocers' itch is not scabies or true itch at all. These are forms of eczema developed on the hands and fore-arms, in consequence of the irritating contact of flour, brickdust, and sugar.

JAUNDICE—(*Icterus*).

Jaundice is characterized by a yellow color of the eyes, skin, and urine, and by the white or clay-colored appearance of the evacuations from the bowels.

Causes.—The circumstances which impede the passage of the bile into the bowels, and consequently produce jaundice, are various. The obstruction may arise from gall-stones in the biliary ducts, from the bile being preternaturally thickened, from enlargements of neighboring parts, from accumulation of mucus in the duodenum plugging up the orifice of the duct, or from inflammation of the liver or duodenum, or of the gall-ducts themselves. But jaundice often arises under circumstances which do not admit of any explanation of the immediate cause of the obstruction ; for

example, it occasionally arises suddenly from violent mental emotions, as intense grief, terror, or a violent fit of rage ; sometimes again it makes its appearance slowly, in consequence of long-continued domestic grief, jealousy, or disappointed ambition ; it may also be brought on in consequence of the pain and shock given to the nervous system from falls, blows on the head, or any other part ; from the reduction of a dislocation, the amputation of a limb, or the enduring of any other severe surgical operation ; from the bite or sting of venomous animals, etc. The nature of several of the varieties of jaundice is still little known ; cases often occur in which the treatment is on this account rendered very uncertain. Indeed it is often necessary to trust almost entirely to the efforts of nature for the removal of the disorder.

Symptoms.—The yellow color is first observed in the eyes ; it then extends to the face, neck, and upper part of the chest ; and at last the whole skin becomes imbued with it ; troublesome itching, or a tingling sensation of the surface of the body, usually accompanies the discoloration of the skin. The urine at first is clear and of a yellowish tint ; but as the disease advances it acquires a saffron color, and ultimately becomes dark green, or of a mahogany color, and deposits a thick slimy sediment. The urine, even when it has acquired a very dark color, tinges the linen of a bright yellow. In general there is a great tendency to constipation of the bowels ; the evacuations are scanty, clay-colored, or white, and voided with difficulty. To these symptoms are added great depression of spirit, watchfulness, a bitter taste in the mouth, furred and yellow tongue, nausea or vomiting, loss of appetite, thirst, and sometimes shivering, copious perspiration of dry skin, and perhaps pain at the stomach. To some jaundiced patients all objects appear of a yellow color, but this is by no means a common symptom of the disease.

Treatment.—Our knowledge is very imperfect with regard to many phenomena connected with jaundice, and until the advances of science throw light on these obscure points, the treatment must be confined chiefly to controlling or removing the symptoms.

Gall-stones are always formed in the gall-bladder, and as long as they remain there are not attended with pain or any inconvenience, but when they find their way into the gall-ducts, particularly if their size happen to be large, they cause jaundice, and the most excruciating pain ; the latter is not constant, but recurs in violent paroxysms, and is said to be more severe than that which results from the most acute inflammation. The pain may come on several days in succession, and continue several hours each time ; it is at-

tended with occasional shivering and profuse perspiration, but not with feverish symptoms. When the paroxysm continues long, it induces extreme lassitude and exhaustion. As soon as the stone escapes from the duct into the bowels the urgent symptoms cease, and recovery soon follows; sometimes, however, it falls back into the duct, and in this case, though the patient is likewise relieved from his suffering, he has reason to anticipate a recurrence of the disorder at some future period.

The treatment in this species of jaundice consists in alleviating the pain by means of opiates. Fifty drops of *laudanum*, the third of a grain of the *acetate of morphia*, or *hypodermic injections of morphine*, should be given and repeated at the expiration of an hour, or after a longer interval, according to the urgency of the case. A warm bath may be of considerable service, and the patient should remain in it until a slight degree of faintness is produced. After two or more doses of the anodyne medicine have been taken, a dose of *castor-oil* is to be administered, and the bowels are to be kept gently open throughout the disorder by mild doses of the same or of some other purgative. If the bowels be obstinately constipated, which is not unfrequently the case, the compound rhubarb pill or a dose of *podophyllin* (see Podophyllin) should be administered, and the dose repeated as often as may be found necessary. Emetics are seldom required in any form of jaundice, and when it arises from gall-stones they cannot be administered with safety. Warm fomentations, applied constantly over the pit of the stomach, may afford some relief, and effervescing draughts may be given to allay vomiting.

Treatment of jaundice during the intervals is oftentimes a matter of difficulty. Each case must be studied by itself, and advice should be obtained in all obstinate cases, at least.

It should be remembered that jaundice is merely a *symptom* or an effect, and that it must be treated by treating the cause. If we must work in the dark, we can by those remedies that act upon the liver, or are supposed to do so. It is proper to state just here that many physicians now doubt whether calomel has any specific effect upon the liver, as has been generally supposed. There are many who use *podophyllin* instead of calomel. It may be given in doses of from one-half a grain to 1 or 2 grains (.03 to .06 or .12 gran).

Nitro-muriatic acid is believed to have an effect on the liver. It may be given in sweetened water. The drink may be made agreeably sour, and taken before meals. *Hard cider* is a good remedy for jaundice, and should be faithfully tried. *Dandelion* is

also supposed to have some influence on the liver. It is well also to try some of the tonic preparations, such as Wyeth's or Caswell's elixirs. (See Tonics.)

If internal medicines fail, it is proper to resort to the *movement cure* or *electrization*. Travelling, a change of air and scene, sometimes succeed when medicine fails.

JOINTS, DISEASES OF—(*Synovitis*).

Joints are subject to inflammation of the synovial or lining membrane. This membrane secretes a fluid by which the joint is lubricated. Inflammation of this membrane may be excited by cold or by injury. The knee is affected more frequently than any other joint. The symptoms are pain, redness, fever, and swelling.

The treatment is rest, hot fomentations, opiates to relieve pain, and saline cathartics.

KIDNEYS, DISEASES OF.

A fit of the gravel is caused by the descent of gritty particles like sand, or of small stones (*renal calculi*), from the kidney, along the ureter to the bladder. Small stones sometimes reach the bladder without occasioning much pain or uneasiness, but in general they give rise to very distressing symptoms.

Symptoms.—The patient is suddenly seized with severe pain in the region of the kidney, extending along the ureter to the bladder, and even to the point of the penis; and generally accompanied with great tenderness at the part of the belly corresponding with the portion of the ureter in which the stone is arrested in its progress. There is also a dull pain, or sensation of numbness, at the inside of the thigh, and sometimes of the leg, of the side affected, with painful retraction of the testicle. The urine is passed in small quantity, tinged with blood, or mixed with clots; and there is frequent vomiting, with violent sickness at stomach, and extreme anxiety. The duration of this affection is variable, and depends on the resistance offered to the passage of the stone towards the bladder; as soon, however, as it gets into that organ, the symptoms cease in the same abrupt manner in which they commence. In general, after a longer or shorter time, the stone, with perhaps a considerable quantity of gravelly particles, passes out of the body along with the urine; but sometimes the painful symptoms above described are only a prelude to a disorder of a much more serious

Plate J.



ИЗДАТЕЛЬСТВО —



HEP- PAN *Hyos yannu* Viger.


$$M_{\text{eff}} = \frac{1}{2} M_{\text{eff}}^{\text{eff}} + \frac{1}{2} M_{\text{eff}}^{\text{eff}}$$


ARK - ROO - Marantaceae



Plate K.



ALLS ICE — *Pyrola*



ARICA — *Arica Montana*



LEP. VAR. — *Lep. var.*



PEPPERMINT — *Mentha Piperita*



MARSH MALLOW — *Alth.*



G. O. AKAB — *G. O. Akab*

nature. The stone, instead of being discharged along with the urine, remains in the bladder, gradually increases in size, and occasions frequent attacks of the most excruciating pain, from which the patient has no means of escaping, except that of submitting to a formidable surgical operation.

Treatment.—The treatment of this affection should be chiefly directed to two points :

1. To mitigate the pain.
2. To facilitate the progress of the stone from the kidney to the bladder.

Opium, which may be regarded as our sheet-anchor in this affection, is then to be given in the dose of 1 to 2 grains (.06 or .12 gram), and repeated every two or three hours, or at longer or shorter intervals, according to the urgency of the symptoms. When the stomach is very irritable, the best way of administering this remedy is in the form of clyster ; a drachm of *laudanum*, with half a teacupful of thin starch, may be injected every two or three hours, or at longer intervals, according to the effect which it produces ; or a *suppository*, containing 2 grains (.12 gram) of solid opium, may be used. In whatever manner or form opium is exhibited in this distressing disorder, it has the effect of soothing the pain, tends greatly to relieve spasm, and consequently favors the descent of the stone into the bladder. The warm bath should be employed, and afterwards warm fomentations are to be applied over the abdomen and loin of the side affected. The pain is sometimes so severe that the perspiration is seen to drop from the patient, and even fainting fits or convulsions may be brought on. Great languor and debility necessarily follow this extreme suffering ; care must therefore be taken to give wine, brandy and water, and other stimulants, in quantities suited to the degree of exhaustion. Stimulating diuretic remedies are not to be given, but the patient may drink freely of linseed tea, decoction of marsh-mallow, or other demulcent drinks.

BRIGHT'S DISEASE—ACUTE FORM.

The symptoms of the *acute* form of Bright's disease are pains in the limbs and back, difficulty of breathing, nausea and vomiting, pain in the head, drowsy of the face and limbs, and *albumen in the urine*, as revealed by chemical tests. All these symptoms come on shortly after an unusual exposure to cold. They may also follow scarlet-fever.

The majority of cases recover ; some go on to the chronic form. Some die from the poisoning of the blood by urea (*uremia*).

Treatment.—1. Keep the skin warm and open by hot-water baths and hot-air baths.

2. Keep the bowels free by purgative medicines.

3. Relieve the kidneys by dry cups over the loins. (See Dry Cupping.)

Most of the inflammations of the kidneys will come under either acute or chronic Bright's disease.

There may, however, be a *congested* state of the kidneys, that does not go on to actual inflammation. *Congestion* may be treated by warm baths, purgatives, and dry cupping of the loins.

One great cause of the fatal character of Bright's disease is the presence of *urea* in the blood (*uremia*). The urea is exceedingly poisonous. The convulsions of pregnant women are frequently due to the presence of urea in the blood.

CHRONIC BRIGHT'S DISEASE.

This disease of the kidneys, which has recently attracted so much attention, received its name from Dr. Bright, of England, who was the first to closely study and define it.

The leading symptoms of Bright's disease are :

1. Albumen in the urine.

2. Casts of the tubes of the kidneys found in the urine by the microscope.

3. Dropsy, general or local.

4. Headache and dimness of vision.

5. Disorder of digestion.

6. Stupor, vomiting, or diarrhoea.

There are several varieties of this disease. In all of them the kidneys are more or less diseased. In all of them it is necessary to call in the aid of the microscope (see Microscope) and chemistry before we can pronounce an opinion upon any case. In some cases the very first sign of Bright's disease is found in the eye, on examining that organ with the ophthalmoscope. In all of them the probabilities are that the patient will never entirely recover, although he may live a number of years.

Many of the symptoms of Bright's disease—Indigestion, headache, dimness of vision, etc.—are also the symptoms of many other conditions. It is therefore necessary to take all the symptoms. It is necessary to have the urine examined by chemical tests, and if possible by the microscope.

The chemical test that is usually employed is the addition of a few drops of nitric acid to a little of the urine in a test-tube, and

then heating it. If albumen is present there will be a whitish deposit, somewhat resembling the white of an egg.

Those who suspect that they may have Bright's disease of the kidneys should consult some good medical authority and abide by his opinion.

Many who fear that they have some disease of the kidneys, really have no such disease. Many who have pains in the back are apt to imagine that they have disease of the kidneys. Nothing is so unreasonable as this fear. (See Backache.) *When Bright's disease actually exists, there is usually no pain in the back at all.*

Chronic Bright's disease advances slowly and insidiously. The kidneys may be diseased a long time before the patient begins to suspect that he is laboring under serious disease.

Patients with chronic Bright's disease often suffer at the same time from bronchitis.

Treatment.—1. To keep the skin open, and thus to relieve the kidneys. Use warm baths. Give the following prescription :

Mindererus spiritus,
Syrup of ipecac,
Tincture of chloride of iron—equal parts.

One teaspoonful three times a day.

Flannel should be worn next to the skin.

2. To sustain the system.

A decoction of the *trailing arbutus* has been known to relieve permanently these cases. It may be given in doses of from one teaspoonful (5 grams) to one tablespoonful (20 grams). Chloride of gold in pill form, and in doses of from one-tenth to one-twenty-fifth of a grain (.006 to .0025 gram).

A diet of skimmed milk exclusively has been recommended.

The following is an excellent combination :

Fluid extract of hydrastis,
“ “ “ eucalyptus,
“ “ “ trailing arbutus—equal parts.

Dose.—One to four teaspoonfuls after meals.

Muriate of ammonia, 2 drachms (8 grams),
Muriate tincture of iron, 1 ounce (32 grams),
Water, 5 ounces (160 grams).

Dose.—One table-spoonful four times a day.

Give tonics of various kinds. Cod-liver oil, the preparations

of iron, quinine, strychnine—all may be tried. The diet should be nourishing and digestible.

3. To relieve the dropsy. (See Dropsy, Treatment of.)

The patient should avoid all careless exposure to cold, and should be as temperate as possible in his habits.

In spite of all that can be done, the tendency is toward a fatal result.

KING'S EVIL. (See Scrofula.)

LARYNGITIS, OR INFLAMMATION OF THE LARYNX.

This may be *acute* or *chronic*. The acute form is not very common, but when it occurs is liable to be a very severe disorder.

Symptoms.—The symptoms are sometimes alarming, and the danger is great. The symptoms are great *hoarseness, pain over larynx, violent coughing, and difficulty of breathing*. Surgeons sometimes resort to opening the wind-pipe in this formidable disease. Patients can do little but apply leeches over the throat, and take soothing inhalations. (See Inhalations.)

CHRONIC LARYNGITIS.

This disease is exceedingly common. It is also very susceptible of relief. The symptoms are *spitting, hoarseness*, sometimes loss of voice (aphonia), coughing, difficulty of swallowing, etc.

The laryngoscope (see Laryngoscope) will at once settle the question in any doubtful case. It will reveal a chronically inflamed condition of the vocal chords and of the other portions of the larynx, and sometimes there will be seen ulceration and loss of substance. From my translation of Tobold's "Chronic Diseases of the Larynx" I select the following description of this disease :

"In certain cases the change of the voice manifests itself only in the morning to a very slight degree, but in the course of the day it becomes much more marked. The respiration is never disturbed in these cases, unless neoplasms which narrow the cavity, or a severe bronchitis exist at the same time. The feeling of roughness or tickling occasions repeated hemming and expectoration. There may be with it an habitual, gentle cough, and sputa may even be expectorated, rolled up in little balls, and tinged with blood. Afterwards, in the more advanced stages of this form of inflammation, there is more violent coughing, with spasmodic paroxysms, and this affection may be much increased by an intervening acute catarrh.

“ The general condition is usually undisturbed.

“ The course of the disease is often very irregular, unless local treatment is employed, and the evil tends rather to increase than decrease. So long as the patient is kept quiet the complaint recedes, while on some trifling cause all the symptoms become worse. In general the evil condition becomes entirely corrected under proper treatment, after a shorter or longer time, without leaving behind any organic disturbance in the vocal apparatus.

“ It should not be forgotten that mucous membranes that have for a long time been affected with inflammation are very prone to relapse after complete or partial recovery provided considerable vigilance be not exercised. This is especially true of disease of the respiratory passages, and of this fact patients should always be forewarned.

“ One of the greatest and most annoying difficulties experienced by laryngologists is the recklessness with which patients expose themselves to night air, and to other injurious influences, while taking a course of treatment for pharyngitis or laryngitis.

“ Amid the cold, dampness, and variations of our northern climate it is often impossible to avoid these relapses, even though every hygienic law be sacredly observed.

“ In the milder and not very old forms of chronic laryngitis, rest of the organs, with other appropriate hygienic management, will be followed by good results.

“ The protection of the organ of speech must be regarded as a condition *sine quâ non*, especially in the female sex. It forms an important adjuvant with every general as well as local treatment. The larynx, with its inner structures, is so delicate and movable an organ, that all mechanical influences are at once more sensitively felt by it when it is once affected with disease, than by any other part of the human body.

“ Therefore the patient should avoid all loud speaking and singing, and all talking in the open air in cold weather, especially while walking. Very irritable, sensitive individuals may use a respirator with advantage, and may wear a flannel jacket, or any tight-fitting close jacket, next to the skin, especially if they are inclined to perspire easily. Laborers who are exposed for a length of time to a pernicious atmosphere, filled with dust or irritating chemicals, must select an occupation that allows them to live in healthy rooms where the air is not too dry, but rather is somewhat moist.

“ The diet of weak persons should be very nourishing and blood-enriching, and they should wholly abstain from all spicy and acid foods that irritate the mucous membrane, but especially from

all spirituous drinks, strong beer, and other heating *liquids* that cause congestions.

“Therefore staying for an unreasonable length of time in restaurants where beer-drinking is going on, and where the thick tobacco fumes darken the air, is to be forbidden most decidedly.

“Continual inhalation of the smoke of tobacco is without doubt far more injurious and irritating to many than the act of smoking itself. I therefore allow a moderate amount of smoking, provided other symptoms do not imperatively forbid, to those who are unquestionably affected with a mild form of laryngitis, inasmuch as I have not observed therefrom any marked disturbances either of a subjective or objective character. As appropriate drinks, I usually recommended milk, cocoa, soda-water alone or with milk, red wine and sugar water.

“Among the so-called hygienic domestic remedies, the drinking of warm water in the morning, and the eating of the roe of herring, sometimes afford a little relief; but we can no more expect a complete cure from these than we can from the hydropathic packings of the throat so much praised by the laity and even by the physicians. They may temporarily diminish the subjective symptoms, but can never accomplish a complete cure, as may be shown by a daily inspection of the parts.”

In this country and in England the so-called “*dysphonia clericorum*,” “clergymen’s sore-throat,” has attracted considerable attention, and was at one time quite fashionable.

There is in this disease nothing that is peculiar, nothing that is distinct from the inflammations of the same parts in laymen.

It is probable, however, that clergymen are more frequently the victims of the various grades of inflammation of the larynx than any other class of professional men.

Causes.—The causes of this discrepancy are quite obvious.

1. Clergymen do most of their speaking on the Sabbath, oftentimes under great pressure, and little or none during the week. The vocal organs are therefore periodically overworked.

Our successful and busy advocates speak more than clergymen, but their labor is more evenly distributed from day to day.

2. Most of our clergymen affect the “pulpit tone,” which is to the last degree unnatural, and is as harmful to the vocal organs as it is to the cause they advocate. Lawyers usually speak in a more natural conversational tone, and are not as closely confined to their notes.

3. Until recently, clergymen have felt it to be their duty to

remove the covering that God designed for the throat—the beard, and to substitute the white cravat of many folds.

This sinful custom is, however, passing away, and with it, in a certain measure, the disease that it invited.

To these three special causes, then, we must look for an explanation of the prevalency of “*dysphonia clericorum*,” and not to other general harassments of their calling; for it is abundantly established by statistics that clergymen are the longest-lived of any class except farmers.

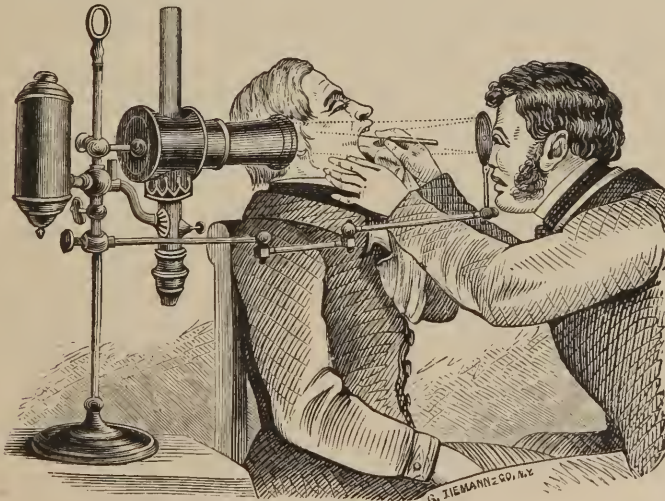
Treatment.—The local treatment of this disease consists in the application of solutions of nitrate of silver, or alum, or iodine, or tannin, or glycerine, or carbolic acid to the diseased membrane by means of sponges or brushes. Sometimes physicians make these applications with the aid of the laryngoscope.

At home patients may take inhalations. (See Inhalations.)

The treatment should be followed up perseveringly. Much relief, and sometimes permanent cure, may result.

LARYNX, DISEASES OF.

The larynx is liable to very many diseases, only a few of which can be spoken of here.



LARYNGOSCOPE.

Since the invention and popularization of the laryngoscope we are much better able to study the diseases of the larynx than formerly, and can also treat them much more successfully.

The laryngoscope consists of a reflector to send the light into the throat, and a small mirror to receive the image of the vocal cords. (See cuts of Laryngoscope.) The discovery and popularization of this instrument are due to two Germans, Czerniak and Türk. It is now quite extensively used by physicians. By means of this apparatus it is possible to see the vocal cords with perfect distinctness. When sounds are made they open and close with great rapidity. (See cuts of Larynx, under Anatomy and Physiology.)

It is also possible to get a view of the rings of the windpipe below the vocal cords.

Among the diseases which are found in the larynx by means of the laryngoscope are the following :

Acute and chronic inflammation. (Laryngitis.)

Tubercular disease. (Laryngeal phthisis.)

Tumors and cancers.

Symptoms.—*Loss of voice, hoarseness, expectoration, pain, difficulty of breathing, cough, and general debility*—these are some of the general symptoms that accompany many of these diseases of the larynx. The laryngoscope helps us to determine just *what* the disease is that causes these symptoms. It has therefore completely changed the treatment of laryngeal diseases.

Quite a number of errors prevail in regard to the diseases of the throat.

1. *That the inflammations of these parts "work down," and cause consumption.*

Unprincipled charlatans have pushed and advertised the idea that consumption *begins* in the throat. The truth is that the deposit of tubercles *first* appears in the lungs. *The throat is not usually affected until later.* When consumptive patients suffer also from serious diseases of the throat we may generally rest assured that the lungs were first attacked, although the patient was not aware of it. *Tuberculous disease of the larynx is rarely cured. Ordinary inflammation of the larynx, even of the chronic form, may often be relieved and cured.*

It is for the physician to decide by the aid of the laryngoscope, if possible, what the disease is, and what treatment must be used.

Loss of Voice (*Aphonia*) is a very common symptom. It may be caused by *inflammation of the vocal chords*, by *foreign growths*, and by *paralysis*. Sometimes the patient loses his voice entirely, but most frequently is able to whisper. In many cases it



LIVER SPOTS (*Tinea versicolor*)

From Photographs of Skin Diseases taken from Life under the direction of Geo Henry Fox, M.D.

E. B. TREAT, N. Y. PUBLISHER

DRY TETTER (*Lichen*)

J. Massman del.

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Fig. 1. The body of the insect.



Fig. 2. The legs of the insect.



is simply an aggravated degree of hoarseness. *Loss of voice* may last a short time, or for many months and years. There are many cases of aphonia or loss of voice that are purely hysterical or nervous. Such cases sometimes get well instantly or suddenly by any excitement. Such recoveries may be permanent. Charlatans sometimes get great fame by curing cases of this kind.

The *Treatment* of loss of voice consists in treating the disease that causes it. (See Laryngitis.)

When it depends on paralysis there is one remedy that is more efficacious than any other—*electricity*. This may be employed in the form of *localized electrization*. (See Electro-Therapeutics.)

LEAD POISONING. (See Lead Colic.)

LEPROSY—(*Elephantiasis Græcorum*).

Leprosy (see Plate VII.) occurs at the present time in India, on the shores of the Mediterranean, in Norway, and in the tropical portion of the western hemisphere. Exceptional cases, and even afflicted communities, are found elsewhere.

It affects different subjects in different ways. Some have numerous small tumors on the skin, particularly on the forehead, while others have large brownish spots, with a loss of feeling, on the skin. The disease is hereditary, non-contagious, and only in a slight degree amenable to treatment.

LEUKEMIA.

A disease in which there is an increase in the number of the white corpuscles of the blood. It is also called *leucocythemia*.

LICE—LOUSINESS—(*Pediculosis*).

There are three kinds of lice which thrive upon the human body—the head-louse, the body- or clothes-louse, and the crab-louse. These differ in size, appearance, and habits. Head-lice are doubtless familiar to the majority of readers, by reputation at least. They thrive in the unkempt locks of sickly and neglected children, and have little difficulty in finding their way to the heads of the healthy and well-cared-for. They glue their eggs or nits to the hair, and increase in number with great rapidity, and sometimes occasion an eruption of crusted pustules on the back part of the head.

Body-lice live in the clothing and pasture on the skin. They cause an intolerable itching, and the free use of the finger-nails produces characteristic scratch-marks across the shoulders, around the waist, and over the hips.

Crab-lice are much smaller than the preceding, and affect the hairy portion of the genitals.

Treatment.—There is no more convenient cure for head-lice than to rub the head freely with kerosene oil every night. Care should be taken not to perform the operation near a gas-jet or lamp for fear of an unpleasant conflagration. The nits can be softened with vinegar or alcohol, and removed with a fine comb. Tincture of staphisagria diluted is a more elegant remedy. Washes of a corrosive sublimate are effective, but should be used with caution.

To kill body-lice the clothing must be boiled or baked for a short time at a high temperature. The eruption on the body will then disappear of itself. Crab-lice are commonly destroyed by a few gentle frictions with a mercurial ointment.

LIVER COMPLAINTS.

ACUTE INFLAMMATION OF THE LIVER.

Inflammation may attack the substance of the liver, or may be confined to the peritoneal membrane with which it is covered; but in the great majority of cases both these structures are affected at the same time.

Symptoms.—The disease commences with a sense of chilliness, or shivering, followed by hot and dry skin, full and hard pulse, thirst, nausea, and generally bilious vomiting. The tongue is white, or coated with yellow fur, and the patient complains of a bitter taste in the mouth; the bowels are generally constipated, though sometimes there is bilious purging; the urine is scanty, high-colored, and deposits a copious brick-colored sediment. Indeed the general symptoms can scarcely be distinguished from those of bilious fever. When the inflammation is deep-seated, and confined to the substance of the liver, the pain is dull; but when it extends to the surface of the organ, or is seated in the peritoneal covering, the pain is then acute, and augmented by coughing, drawing in a full breath, lying on the sound side, or by pressing with the hand under the rib at the right side, either in front or behind, towards the spine. When to the above symptoms are added jaundice, pain at the top of the right shoulder, and swelling at

the region of the liver, this cannot be mistaken for any other disease; but these signs, even in the most severe cases, are sometimes entirely absent.

Acute inflammation of the liver, when not neglected at the beginning, generally ends favorably between the seventh and twelfth day from the commencement of the disease, and is usually followed by bilious purging, a copious sediment in the urine, severe itching of the skin, or bleeding from the nose.

When the inflammation terminates in the formation of an abscess, which is not an uncommon occurrence in warm climates, the pain becomes more acute, and is accompanied with a sensation of throbbing; there is a troublesome dry cough, and in many cases hurried breathing; the pulse, though still full, becomes softer; the palms of the hands are distressingly hot; the sleep is disturbed; fits of shivering, alternating with profuse perspiration, are experienced; and all these symptoms are aggravated towards night. In some cases, as soon as the matter begins to form, all the feverish symptoms abate, and the pain gradually diminishes; but the swelling continues, and the chills or shivering, alternating with perspiration, never fail to be experienced. This termination is generally fatal, either in consequence of the matter remaining confined in the liver, or by the abscess bursting into the cavity of the belly. But it sometimes happens that the abscess points externally, and the aid of the surgeon is required to give vent to the matter; or it bursts spontaneously and the patient recovers. Sometimes, again, the matter escapes from the body through other channels, and the patient is thus rescued from death.

Treatment.—It is next to impossible for one not medically educated to make out correctly an inflammation of the liver as such. It will very likely be confounded with *abscess*, or some other affection.

When we have good reason to believe that the liver is either congested or inflamed, we can cautiously use those remedies that are supposed to act upon that organ. These are:

1. Calomel, in small doses.
2. Nitro-muriatic acid, from two to five drops in water, several times a day.
3. Dandelion, in teaspoonful doses of the extract.
4. Leptandrin, in half-teaspoonful doses of the extract.

Bicarbonate of soda, $\frac{1}{2}$ ounce (16 grams),
 Infusion of gentian, 7 ounces (224 grams).

DOSE.—One table-spoonful four times a day.

It is probable that calomel affects the liver, although there is yet difference of opinion in regard to that question.

In small doses, and used judiciously, calomel is certainly the safest, most agreeable to take, and most effective of all the remedies that have been employed in liver disorders.

It is because it is so good that it has been so much abused.

Those who have a prejudice against calomel, which they can not overcome, may take *podophyllin* in doses of one quarter of a grain (.016 gram) three times a day.

In abscess of the liver little can be done but sustain and support the system, and let nature do the rest.

A foot-bath, composed of three gallons of water, at the temperature of 96°, mixed with two ounces of nitric acid and one ounce of muriatic acid, used every night for half an hour at bedtime, is strongly recommended by several distinguished East Indian medical men; and sponging the body with a wash of the same nature has also been found serviceable.

CHRONIC INFLAMMATION OF THE LIVER

Is frequently met with in temperate climates, and is much more common in intertropical countries than the acute form of the disease. It is sometimes a sequence of the latter; but in most cases it comes on gradually, and is at first scarcely noticed by the patient. Pain in the region of the liver is the principal symptom in the chronic as well as in the acute form of the disease; in the former it is dull, heavy, and increased by pressing with the hand over the part, by going quickly upstairs, riding on horseback, and, in fine, by any kind of active exercise; it is also aggravated by lying on the left side, or by any excess in eating or drinking; and in some cases may not be felt during many months, unless under the above or similar circumstances. Cough is only an occasional symptom when the inflammation is acute, whereas the chronic form of the disease is almost invariably accompanied with a short dry cough; and quick walking or any unusual exercise brings on hurried and difficult breathing, and perhaps a fluttering sensation at the heart. The skin and eyes acquire a slightly yellow tinge, the evacuations from the bowels have occasionally a white or clay-colored appearance, indicating a deficiency of the biliary secretion; while at the same time the urine is scanty, high-colored, and deposits a copious sediment; and when the disease is of long standing, the liver is generally observed to be unnaturally large. The symptoms, however, are sometimes so obscure that the only indication of the

disease observed by the patient is a dull pain or an uneasy sensation under the ribs at the right side. In many cases the first symptoms noticed are a yellowish color of the skin and of the whites of the eyes, the unnatural appearance of the evacuations from the bowels above mentioned, and the saffron-colored urine, depositing a brick-dust-like sediment. If the right side be examined, the liver will probably be found slightly enlarged, and tender when pressed upon; but when not touched, the patient only experiences an uneasy sensation of weight at the part, and is unable to sleep when lying on the left side.

The liver is a much-abused organ in various ways. It is worked too much and dosed too much. Nor is this all. It is charged with crimes of which it is not guilty. Nervous dyspepsia is too frequently called *biliousness*. The word *bilious* is very indefinite, and frequently misleads. Probably the *nervous system* is more at fault than the liver in most of the cases of nervous dyspepsia. Those who have a bad taste in their mouth, who are wearied, worn, dyspeptic, and sleepless, oftentimes say that they are bilious when they are really only nervously exhausted. Perhaps the bile may be deficient in quantity or bad in quality; perhaps it may flow into the stomach and cause aversion to food, nausea, and vomiting; but in a great many cases of the so-called biliousness the trouble lies in the *nervous system*. The patient, therefore, does not need to be *purged and pulled down*, but to be *fed and built up*. When they get stronger their fancied biliousness will disappear. This is a subject of great importance, and should be thoroughly understood. Patients who are in this condition of exhaustion should take iron, bark, phosphorus, arsenic, and the like. Every case is a law unto itself, and must be studied by itself.

There are a variety of diseases of the liver which need not here be described in any detail. I may simply give their names: "hob-nailed" liver, which is said to be common among drunkards; *fatty degeneration*, *enlargement*, *cancer*, etc.

These diseases can only be made out and studied by a competent physician. *Percussion* (see Percussion) is one of the means by which physicians ascertain the condition of the liver.

Active out-door exercise sometimes works wonders in these cases, especially for those whose occupations are sedentary.

CHRONIC PAIN AT THE RIGHT SIDE.

Many persons are affected with pain at the region of the liver, which becomes, at times, exceedingly severe, without being accom-

panied by symptoms of general excitement or swelling. It generally occurs in females; but whether it be of a purely nervous character, or the effect of partial congestion, is not known. This affection, though sometimes very distressing, is not attended with danger. In some instances, after continuing several years, and obstinately resisting every method of treatment, it has gone off entirely, without any perceptible cause. It is more frequently removed by a course of the rust of iron, with aloetic purgatives and regular exercise in the open air, than by local bleeding and mercury.

Torpor of the liver, or deficiency of the biliary secretion, is indicated by the evacuations from the bowels being more or less whitish or clay-colored, by languor and depression of spirits, capricious appetite, impaired digestion, languid pulse, a sluggish state of the bowels, and sometimes giddiness or headache; there may be also a yellowish tinge of the eyes and skin.

LIVER SPOTS—(*Tinea Versicolor*). (See Plate XII.)

The term liver spots is applied to several skin affections: 1, to yellowish patches occurring at the inner angles of the upper eyelids and elsewhere, and associated with hepatic derangement (xanthelasma); 2, to dark brownish or greenish discolorations of the skin, often noted upon the foreheads of females during pregnancy (chloasma); and 3, to light yellowish-brown specks and patches met with frequently upon the breast, which are parasitic in their origin and have nothing to do with the liver (*tinea versicolor*, *chromophytosis*).

Treatment.—To remove the latter the skin should be scrubbed with soap at night, and then bathed with a lotion of hyposulphite of sodium—one half drachm to the ounce (2 to 32 grams). One or two weeks' treatment will effect a permanent cure.

LOCKED JAW—(*Tetanus*).

Tetanus is characterized by violent and painful contractions of the voluntary muscles of the whole or some part of the body, accompanied with tension and permanent rigidity of the muscles affected; the mental faculties and power of sensation remaining unimpaired.

Symptoms.—The approach of this painful and dangerous disease is seldom announced by any premonitory signs. In general the earliest symptom is a feeling of stiffness about the neck and at the back of the head, which in most cases is first observed on awakening in the morning, or after sleeping during the day; this

increases and extends to the jaws, while the throat becomes dry and slightly sore. These symptoms, however, so frequently occur from exposure to currents of air or other circumstances, and wear off without putting the patient to much inconvenience, that at the commencement of this disorder they are generally overlooked. But a train of symptoms soon follows which distinguish this from all other diseases. The muscles of the neck and jaws become rigid, painful, and are occasionally seized with spasms; the patient then finds considerable difficulty in opening his mouth; the power of swallowing is impaired; and before long a sudden spasm brings the teeth firmly in contact, so that the mouth cannot be opened by the most powerful efforts. If the spasms and rigidity do not extend to other muscles the disease is called *trismus* or *locked jaw*, which, though a less painful form than that in which the muscles of the body and limbs are affected, can scarcely be considered as less dangerous. The next circumstance which generally takes place is great difficulty of breathing, occurring in paroxysms, and accompanied with violent pain about the midriff or diaphragm; this is occasioned by the spasmodic action and rigidity having extended to the muscles of the chest; but although the violent and painful contractions about the chest, and consequent difficulty of breathing, are much more severe at one time than at another, they never entirely cease, and constitute the chief source of the patient's suffering throughout the progress of the disease. The muscles of the belly are drawn in towards the spine, and in some cases become as hard as a board. When the disease is at its height the muscles of the limbs are also rendered stiff, and partake of the general spasm, which is sometimes so violent that the body is bent in the form of an arch, its whole weight bearing upon the crown of the head and the hips, or sometimes on the heels; in other instances, again, the body is bent so as to rest upon the forehead and toes; but this is a rare occurrence, and the lateral incurvation is still more rare. We have had several patients with chronic tetanus under our charge, in whom the trunk and limbs were perfectly rigid. In such cases the individual is completely helpless, and lies on his back.

The extraordinary postures into which the body is thrown during the paroxysms of spasms, the strangely and frightfully distorted appearance of the features, caused by the spasmodic contraction of the muscles of the face, and sometimes the expression of laughter or grinning which the countenance retains during the most intense pain, unite in rendering the patient a remarkable but truly painful object of observation. The eyes appear watery, and remain fixed, staring, and motionless in their orbits; sometimes the tears are seen

to trickle down the cheeks; and in the more severe cases, the teeth are occasionally broken by the violent spasmodic action of the muscles of the jaws.

It rarely happens that any kind of treatment is resorted to at the onset of tetanus, because, as we have already mentioned, its earliest indications are common to other disorders of comparatively little importance, and are therefore almost invariably overlooked. The first symptoms which alarm the patient are slight stiffness about the jaws, and some degree of difficulty in swallowing, especially of fluids. These uneasy sensations are usually accompanied or soon followed by a painful feeling of constriction under the breast-bone. More importance is to be attached to these symptoms if the patient has previously pricked, bruised, or in any way injured one of his thumbs or fingers, or if he has wounded one of his toes in cutting a corn; in a word, if he bear a wound, whether slight or severe, upon any part of his body or limbs, he may then be certain that the indications above mentioned announce the approach of a series of more urgent symptoms, which may soon place his life in imminent peril. He ought, therefore, to lose no time in endeavoring by active measures to ward off the sufferings with which he is threatened.

Endemic Tetanus.—Tetanus is especially common in certain localities; as, for example, in the eastern portion of Long Island. According to my investigations, it is not so frequent there as formerly.

Treatment.—Many methods of treatment have been proposed and attempted for tetanus, but all are uncertain.

1. Give a grain of opium every two or three hours.

Brandy or other stimulants may be given at the same time in large doses.

2. *Ice to the spine.* This may be applied wrapped in a towel or cloth, or in the ice-bags. (See Ice-bags.)

Important cures have been claimed by this method of treatment alone. It is certainly worthy of a trial.

3. *The inhalation of ether or chloroform.*

Physicians now employ calabar beans in small doses every hour, keeping the patient under the physiological effects. This remedy should be prescribed only by the physician.

LOCK JAW OF INFANTS (*trismus*).

This affection is very common in warm climates, more especially in the West Indies, where it was formerly computed to have destroyed upwards of a third of the negro infants shortly after birth.

Plate L.



RUE — *Ruta graveolens*.



QUASSIA — *Quassia tinctoria*.



LIME — *Citrus limetta*.



CORIANDER — *Coriandrum sativum*.



BALSAM OF FIR. — *Abies balsamea*.



GENTIANA — *Gentiana*.

It usually occurs within the first ten days after birth, and has been ascribed to various causes, such as irritation produced by tying the navel cord, or by subsequent neglect of cleanliness, exposure to currents of air, and irritation of the bowels.

The infant, at the commencement of the disease, appears less lively than usual, and is observed to suck with some degree of difficulty; the jaw soon becomes stiff and immovable, and the child, being then rendered incapable of sucking the breast or of swallowing, gradually sinks, or dies in convulsions.

Dissection has thrown no light on the nature of this disease; no morbid appearances whatever were discovered in any of the bodies which we have examined.

LOCOMOTOR ATAXY.

This is a name given to a disease that was formerly confounded with paralysis of the lower limbs.

Symptoms.—The patient afflicted with it cannot properly control the movements of his legs. He staggers oftentimes like a drunken man. The difficulty may extend to the hands. Sometimes he fails of grasping an object that he aims for. The sight may also be affected. *Sharp, piercing pains* are often felt in the limbs, especially at the outset of the disease. The nerves of motion are not usually affected, but only the nerves of sensation.

These are only a few of the general symptoms of this disease. It is not to be expected that any but experienced physicians will be able to make out this disease, or to discriminate between it and common paralysis.

The results of the *treatment* of this disease are not very encouraging. Very few cases recover. This disease is usually caused by degeneration of a portion of the spinal cord.

Galvanization of the spine is oftentimes of very decided service. (See General Electrization.)

Phosphorus, phosphoric acid, nitrate of silver, and sometimes strychnine have been beneficial. But with all our treatment the disease is a grave one. Some of these cases live for many years and in general the progress of the disease is very slow.

LONG-SIGHTEDNESS. (See Eye, Diseases of.)

LUMBAGO. (See Rheumatism.)

LUMBAR ABSCESS. (See Abscess.)

LUNGS, INFLAMMATION OF—PNEUMONIA—CONGESTION OF THE LUNGS.

Cause.—Cold is undoubtedly the most common exciting cause of inflammation of the lungs. This is clearly shown by its prevailing to a much greater extent in winter and spring than in summer, by its frequent occurrence in cold climates, and rare appearance in intertropical countries.

Symptoms.—Inflammation of the lungs (*pneumonia*), like all other inflammatory diseases, is generally ushered in by the usual symptoms of fever. The patient is first attacked with a fit of shivering, which is soon followed by hot skin, flushed face, quick pulse, and the characteristic symptoms of the disease, namely, pain, more or less severe, in some part of the chest, quickened and oppressed breathing, with cough and reddish-colored expectoration. When the substance of the lungs only is inflamed, the pain is dull and heavy, or there is a sensation of heat and weight in the chest without pain; but in the great majority of cases the *pleura*, or membrane which envelops the lungs, is also affected (see Pleurisy), and then a fixed pain, more or less severe, is experienced at a particular part of the chest, which is increased by coughing, or attempting to take in a full breath. Difficulty of breathing is a constant symptom, and is more or less urgent according to the extent or intensity of the inflammation. The respirations in a healthy person vary in number from sixteen to twenty in a minute; but in this disease they are increased to thirty, or even to forty, within the same time. When both sides of the chest are affected, and the inflammation is severe, the anxiety, oppression of the chest, and difficulty of breathing are exceedingly distressing, and the patient feels as if he were about to be stifled; but in ordinary cases only one lung is affected, and the symptoms are then less urgent. The patient finds the difficulty of breathing increased by lying on the sound side, and therefore remains on the side affected, or on the back, with the shoulders well elevated; the latter is the attitude generally preferred under all circumstances. The expectoration is at first scanty, and composed of a little thin frothy mucus, but in the course of a day or two becomes more copious, exceedingly viscid, and assumes a yellow, reddish, or rusty color, according to the quantity of blood with which it is mixed. The more severe the inflammation is, the more coherent and high-colored is the ex-

pectoration, which becomes, when the disease is at its height, so remarkably tenacious that it adheres to the sides of the vessel even when inverted and shaken in that position. The pulse in most cases is quick and sharp, sometimes hard; there is a peculiarly hot, dry, or parched feeling of the whole surface of the body; the urine is scanty, and very high-colored; and with these are conjoined the other symptoms of fever, namely, thirst, loss of appetite, furred tongue, headache, pain in the loins and extremities, and weakness. Sometimes the brain becomes affected in the course of the disease, causing delirium; or the stomach, giving rise to nausea, and perhaps vomiting; and not unfrequently the fever, instead of being inflammatory, is of the typhoid form.

The symptoms in favorable cases begin to decline about the fourth day; this change is indicated by the skin becoming more cool and moist; by the cough, which was previously short and dry, becoming loose and less painful; by the expectoration being more abundant, less viscid, and gradually changing from the reddish or rusty tint to a yellowish color; these signs of amelioration being accompanied with a corresponding diminution of the feverish symptoms. Some critical evacuation also usually takes place, such as perspiration, a copious deposit of red or white sediment in the urine, or purging; the first is generally understood to be the most common. The average duration of the disease is from eight to twelve days, but sometimes it is prolonged for a fortnight or three weeks, and followed by tedious convalescence, which is liable to be interrupted by a relapse from any slight cause.

The symptoms which mark an unfavorable termination are a small, jerking, and rapid pulse, the expectoration being much diminished or altogether suppressed, great frequency of respiration, and a livid appearance of the countenance. Lethargy and delirium also indicate extreme danger.

The symptoms which particularly characterize inflammation of the lungs are the peculiarly pungent heat of the skin at the commencement of the disease, and when further advanced, the orange-red or rusty color of the expectoration, arising from the intimate admixture of blood with the secretion from the bronchial membrane, and its great tenacity, which, as we have already mentioned, does not allow it to be detached from the receiving vessel even when we turn it upside down.

Lung fever may be inflammation of the substance of the lung or of the pleura. In the former case it is called *pneumonia*, in the latter *pleurisy* (see Pleurisy). The two may exist at the same time.

Physicians now determine these diseases by auscultation (see *Auscultation*) and percussion (see *Percussion*, and *Stethoscope*).

Congestion of the Lungs.—The *early stage of lung fever* may be relieved by the application of bran poultices to the chest and back between the shoulder-blades. The poultices may be made of wheat or rye bran. A small bag, containing a pint of bran, may be dipped in hot water and immediately applied. This simple treatment may afford great relief until the physician arrive.

It is therefore very important to have good medical advice in all severe and acute inflammations of the lungs, especially as these diseases are frequently fatal.

When no physician is at hand, and the symptoms are such as have been described, the following treatment should be used:

1. Keep the bowels freely open by Epsom salts or some simple laxative.

2. Give small doses of *ipæcac*, one to three grains (.065 to .19 grani), every three or four hours. Tartar-emetic and veratrum viride (see *Veratrum Viride*) are used in this disease to reduce the inflammation and lower the pulse.

3. Keep the chest covered by oiled silk. Allow the patient cooling and agreeable drinks, such as lemonade and the effervescing draughts.

In *typhoid lung fever*, when the patient is much exhausted, the system should be sustained by *beef-tea*, *whiskey*, *brandy*, *punches*, *opium*, and *quinine*. (See *Typhoid Fever*, Treatment of.)

Bromide of potassium in doses of 10 grains (.62 grams) every two hours. In debility the following may be given:

Sulphate of quinine, 2 grains (.12 gram).

Carbonate of ammonia, 4 grains (.25 gram).

Take the above at a dose every 4 hours, or this:

Carbonate of ammonia, 4 grains (.25 gram).

Chloroform, 20 drops (1 gram).

Camphor water, 1 drachm (4 grams).

Take the above amount every four hours.

In *pleurisy* it is necessary to give some diuretic, like *iodide of potassium*, to carry off the fluid that accumulates in the pleural cavity. Blisters are also applied over the affected side with benefit. Sometimes it is necessary to “tap” the chest and drain off the fluid.



MEASLES

Anatomically drawn and colored by W. F. Hoester and Chromo Lithographed expressly for "Our Home Physician"

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LUPUS.

Lupus is a disease which attacks the skin, increases year by year in extent, and sometimes causes destruction of the nose when it occurs in that region. Its favorite locality is the face, and it never occurs in childhood. The disease must be treated by vigorous measures, and the longer this is delayed the greater will be the scar and resulting disfiguration. (See Plate XVI.)

LYMPHOMA.

A disease in which there is enlargement or tendency to enlargement of all the lymphatic glands.

Children and the young of both sexes are most likely to be affected. The glands in this disease do not soften or suppurate as in scrofula, but remain hard and solid.

MALARIAL FEVER. (See Ague.)

MARASMUS.

A wasting disorder of children. It is a result of poor food, diarrhea, and diseased condition of the intestines and mesenteric glands. The treatment consists in good nursing, abundance of proper food, and pure country air if possible.

MASSAGE. (See Movement Cure.)

MEASLES.

Measles generally occurs as an epidemic malady amongst children, but it may attack only a few individuals in a locality, or may affect adults as well as those of tender years. (See Plate IV.)

Symptoms.—The symptoms which show that a child is about to be attacked by measles are commonly significant enough. The little patient complains of general heaviness, the eyes are red and watery, and a thin fluid often runs from the nose as from persons affected with a cold in the head; the patient also sneezes frequently. More or less fever now sets in, accompanied in many cases by a very hoarse barking cough, which has often been mistaken for a symptom of croup; the stomach rejects food; the child complains of pains in the limbs or back, and if very young is often

attacked by slight convulsions, while older children are in many cases delirious at night. Nothing can be more various than the intensity of these premonitory signs; sometimes the eruption makes its appearance with so little disturbance of the general health that the patient is not even confined to bed; but in other cases the fever runs extremely high, and great alarm would be excited did we not know that it was the forerunner of an eruptive disease. Towards the end of the third or beginning of the fourth day (but in some cases as late as a week), small red spots, resembling flea-bites, make their appearance about the face, and then extend over the neck, chest, belly, and limbs. The spots are at first separated from one another, but they soon join and form clusters of a horseshoe shape and dusky red color.

The appearance of the eruption, however, does not, as in the case of small-pox, bring with it much alleviation of the symptoms. The fever, cough, and hoarseness continue or are more severe, and in many instances the whole face is swollen, and the patient complains of violent headache, with difficulty of breathing.

About the third or fourth day after the appearance of the eruption the redness on the face begins to diminish, and it subsides on other parts of the body in the same order as that in which it commenced. When the eruption has completely passed away the scarf-skin comes off in small mealy scales, and some patients at this time experience a most intolerable degree of itching. Finally, about the ninth day the skin is completely free from any sign of the eruptive affection.

Such is the course of measles in its mild or benignant degree; but in many cases the disease does not hold this favorable course. Two things are chiefly to be apprehended during its progress: first, the appearance of nervous symptoms; and, second, the occurrence of inflammation of the lungs, by which a very great number of children affected with measles are cut off.

Although, generally speaking, measles is a mild complaint, yet during certain epidemics it assumes a most dangerous character and destroys an immense number of children. The symptoms of the malignant form are, at the commencement, great prostration of strength, anxiety, and tendency to sleep; vomiting and looseness of the bowels; hemorrhages from the nose, stomach, or bowels; violent delirium, and convulsive tremor of the limbs, or general convulsions. The eruption breaks out on the second day, and the fever, with all its attendant symptoms, is aggravated; the eruption rapidly declines, or assumes a livid hue, and is mixed with the blue fever spots; the delirium now becomes more violent, the

convulsions are frequent, and the patient commonly sinks in a state of complete insensibility. This highly dangerous and fatal form is, however, rare, and seldom occurs except during certain epidemics. But children are peculiarly liable to inflammation of the lungs during the decline of the eruption, or within a few days after its disappearance. This occurrence is indicated by a change of color in the face and lips, which assume a purplish hue; the skin becomes very hot and dry; the respiration is oppressed and quick, often rising to sixty or seventy in the minute; the nostrils dilate at each inspiration, and the pulse is excessively quick. The child may or may not cough; but we should never forget that young children may labor under a very severe degree of inflammation of the lungs without either coughing or spitting up any mucus from the chest. Inflammation of the lungs thus attending measles often lays the foundation of consumption, by which the patients are carried off many months, or even years, after the cure of the original disease.

In some cases the eruption suddenly disappears from the face and body. The sudden subsidence of the eruption is in itself a matter of little consequence; it becomes, however, one of much importance, because it generally depends on, or at least is connected with, an inflammatory condition of the lung, intestines, brain, or some other internal organ.

Treatment.—In an ordinary attack of measles we have little more to do than keep the child in bed, administer any mild laxative medicine, so as to keep the bowels open, and give cooling drinks. The disease must run its course; and unless untoward accidents arise, the patient will, generally speaking, get well through the aid of nature in twelve or fifteen days.

Measles, as all know, is a very contagious affection. There are those who have had two attacks. A case is reported of a family, when, after all the children were successively attacked, *the disease again attacked the one who first had it.*

The course of treatment is usually very simple indeed, even for the quite severe cases:

1. Bathe the skin daily with tepid water, taking care not to expose but a portion of the child's body at a time.

2. Give cooling and agreeable drinks; *lemonade* and *hard cider* are both excellent. Let the taste of the patient decide which to have.

3. *Tonics and nourishing food.*

This treatment is only necessary for the cases that are followed by debility.

It is not necessary to use many *expectorant remedies*. They are all *uncertain in their action, and are very apt to disturb the stomach*.

Care should be taken to prevent the patient *from taking cold*.

It is therefore not well to expose one's self very soon after recovery.

Measles leave the eyes in a weak condition, therefore it is necessary to take especial care that the patient does not begin to read or to sew during convalescence. There are many who seriously and permanently injure their eyes by beginning to use them too early and too often when convalescing from measles.

Another bad result that measles sometimes leaves behind it is deafness, with discharge from the ear. The inflammation of the throat extends into the middle ear and causes ulceration. To avoid this danger the throat should be frequently gargled, if the patient is old enough to gargle, with solutions of chlorate of potash and water—one drachm (4 grams) of chlorate of potash to one ounce (32 grams) of water. The same solution may be snuffed up the nostrils three or four times a day during convalescence.

When the eruption suddenly disappears, we must not conclude that this is necessarily a sign of weakness, and commence at once with wine or other stimulating fluids. On the contrary, it will be more prudent to endeavor to ascertain whether this may not depend, as has already been mentioned, upon some internal inflammation; but if the disappearance seem to be connected with a general state of weakness, or to have occurred without any apparent cause, then we may give small quantities of wine and water, but with very great caution, or administer the *carbonate of ammonia* in the following manner:

Sub-carbonate of ammonia, 6 grains (.39 gram),

Camphor, 3 grains (.19 gram),

White sugar, 3 scruples (3.75 grams).

Divide into three powders; one to be taken every second hour.

MEGRIM. (See Sick Headache.)

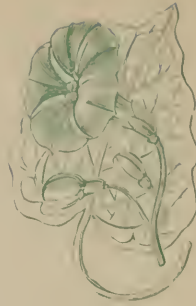
MELANCHOLIA.

A form of insanity, the chief symptoms of which are profound depression and delusions. (See Insanity.)

Plate M.



TANSY *Tanacetum Vulgaris*.



JALAP *Ipomea Purga*.



POPPY *Papaver Somnifera*.



RHUBARB *Rheum Palmatum*.



MEADOW SAFFRON *Colchicum Autumnale*.



HYSOP *Hyssopus*.

MELANOSIS.

A disease of which the chief feature is the deposition of dark or dark brown coloring in various textures and organs. Any form of tumor may become *melanotic*.

MENINGITIS. (See Spotted Fever.)

MENORRHAGIA. (See Excessive Menstruation.)

MENSTRUATION—MENSES—MONTHLIES.

The periodical discharge of females termed menstruation indicates the power of procreation, and when regular and in due quantity serves not only as a sign of health, but as a powerful means of preserving it. This discharge appears intended to relieve the system of the blood which is destined for the support of the fœtus during pregnancy, as well as for the secretion of milk, the natural aliment of the child during the first months of its existence; and has also the effect of stimulating the womb, and fitting it for conception. If, therefore, the superabundant blood which is intended by nature to be discharged through the medium of the womb be retained in the system, it must tend to induce local disease or general derangement of the health; and if, on the other hand, the discharge be much greater, or occur more frequently than natural, the body will be weakened, and the health otherwise injured. Hence, from the great influence which menstruation must necessarily exercise over the whole system, it is obvious that perfect health cannot be maintained while there is any irregularity or disorder of this important function.

A delicate and luxurious manner of living, early excitement of the imagination, want of suitable exercise in the open air, sleeping upon down beds, late rising, and, in a word, mismanagement or neglect of the moral or physical education of girls, tend strongly to induce precocious menstruation. The non-appearance of the discharge before the age of seventeen, or even later, is more desirable than its premature occurrence; the latter, however, is not to be considered as a disease in itself, although it generally indicates a feeble constitution.

Young women are often late in menstruation, and this sometimes becomes a source of much anxiety to parents; but although it be delayed considerably beyond the seventeenth year, there is no

occasion for alarm as long as the usual signs of puberty are absent. In this case we are not authorized to adopt means for the purpose of hastening menstruation, nor should we be justified in attempting to remove the various ailments to which girls are subject at this period of life, by administering remedies to bring on the menstrual flux. But on the other hand, when, at the usual age of puberty, pain is experienced from time to time at the loins and in the abdomen, with an unusual development or painful sensation of tension of the breasts, a periodical swelling at the lower part of the belly, and other symptoms indicating that the system is making fruitless attempts to establish menstruation, it then becomes necessary to adopt means to aid the efforts of nature, in order to prevent the serious consequences which might result from retention of this salutary evacuation. But we are not to interfere more than is really necessary. When medical aid is really required, the remedies to be employed must depend greatly upon circumstances. If the girl be full-blooded and of a robust constitution, and if, at the period when the symptoms above enumerated are experienced, she complain of headache, while at the same time the pulse is full, the face flushed, and other symptoms are present, indicating an excess of action, the bowels should be mildly acted on by cooling purgatives every second or third day; and the diet must be mild and carefully regulated, and stimulants of every description entirely abstained from.

An opposite state of the system, approaching to chlorosis (green-sickness), occurs much more frequently than the plethoric state above described. In this case the patient becomes pale, languid, emaciated, loses strength, and is easily fatigued; the pulse is feeble, the bowels are constipated, and she complains of being unable to keep her feet warm. The treatment indicated in the last case was to lower the plethoric patient to a state favorable to menstruation; here, on the contrary, we must endeavor to raise the patient to the same state by tonic and strengthening remedies. Of this class of medicines, preparations of iron hold the first rank. From ten to fifteen drops of the *tincture of chloride of iron* in a little water should be taken regularly three times a day, and the bowels are to be kept open by some aloetic aperient.

The hip-bath and foot-bath should also be frequently used; the water at first ought to be about the temperature of a hundred degrees of Fahrenheit's thermometer, and afterwards gradually increased until it is as hot as the patient can bear.

The strength must be supported by generous diet. Frequent friction of the lower extremities with the flesh-brush or horse-hair

glove is serviceable ; and instead of depressing the girl's spirits by confining her to the house, and treating her as if she were laboring under a serious illness, she ought to be allowed to enjoy the benefit of change of air, plenty of out-door exercise, particularly on horseback, and the society of agreeable companions. Every care should be bestowed to render her cheerful and happy.

In general, the duration and quantity of the first discharges are not to the same extent as when menstruation is fully established ; and it often happens that two or three months elapse between the first and second discharge, and sometimes the menses do not appear at regular periods until the expiration of a year or two.

It is of the greatest importance that young women should be instructed *early* by their female friends in the management of themselves during menstruation. Exposure to cold, dancing, and all kinds of active exercise, food difficult of digestion, bathing, medicines, particularly emetics and purgatives, mental excitement, and other causes which might check the discharge, ought to be carefully avoided at this period.

Even in the most healthy women menstruation occasions a general disturbance of the system that cannot be entirely disregarded with impunity. There is peril in exposure or exertion at that time which might be perfectly harmless during the interval ; and thousands of suffering and feeble women date their troubles from slight indiscretions at this critical period. The daily routine of ordinary duties may often be performed with little or no discomfort, but it is always of the greatest importance to guard against any exertion that fatigues either mind or body. Those who suffer from irregular or painful menstruation should be especially careful of themselves, not only during their sickness, but for two or three days before and after. Much may be lost and nothing can be gained by taxing the energies to their utmost, when nature imperatively demands repose.

CHLOROSIS—GREEN-SICKNESS.

A characteristic symptom of chlorosis is a pale yellowish-green complexion ; hence it is commonly called *green-sickness*. It is often associated with disordered menstruation, and therefore is treated of in connection with that subject.

Symptoms.—Chlorosis is always a chronic disorder, and commences slowly. The patient is at first languid and listless, disinclined to amuse herself as usual, and is easily fatigued by ordinary mental or bodily occupation ; her face gradually becomes pale, and

the skin assumes a sallow appearance; the bowels are constipated she loses her appetite, and has sometimes an unnatural craving for certain articles of food; the tongue is white, the breath fetid; and if menstruation has been already established, the discharge loses its red color, and diminishes in quantity until it no longer appears.

In the confirmed state of the disease there is often considerable emaciation; the flesh loses its firmness; the lips, tongue, gums, and inside of the mouth are unnaturally pale or whitish; slight swelling in the eyelids and face is observed in the morning; this wears off during the day, and at night the feet or ankles are swollen; the urine is pale and limpid; the belly is frequently enlarged from flatulency, particularly after eating; there is sometimes nausea or vomiting in the morning, heartburn or other symptoms of indigestion. The appetite is in many cases morbidly capricious. Sometimes there is a craving desire to eat pickles, chalk, lime, pipe-clay, cinders, etc. The shortness of breathing, which in the first stage was only slight, is now exceedingly oppressive, and accompanied with palpitation of the heart on ascending the stairs, attempting to walk quickly, etc. The pulse is feeble and small, there is great difficulty in keeping the feet warm; sometimes there is cough, periodical headache, and a variety of nervous or hysterical symptoms.

Causes.—Females of the lymphatic temperament and of weak constitution are most frequently attacked with chlorosis. It is developed under various debilitating causes, as frequent exposure to cold moist atmosphere, watery or poor diet, more especially when conjoined with fatigue and long watching, the various depressing passions, as grief, unrequited love, etc.

This disease seldom proves fatal; but when left to itself, or badly treated, it may be prolonged during many months, or even years, and may leave traces of its injurious effects on the constitution in after life.

Treatment.—There is no disease in which the administration of iron, in some of its many forms, is attended with such uniform favorable results. The tincture of chloride of iron should be taken in doses of fifteen drops three times a day, or about half an hour before each meal; the diet must be nourishing, as fresh meat and bread, and easy of digestion. The patient should walk out in the air and sunlight, take plenty of sleep, and frequently sponge the body off and rub thoroughly dry with a coarse towel. Care is necessary, however, to avoid attempting too much at first. The bowels are to be regulated before beginning a tonic course, and

the stomach must be gradually accustomed to the medicine. The following prescription may be of service :

Carbonate of iron, 2 drachms (8 grams),
 Extract of cinchona, $\frac{1}{2}$ drachm (2 grams),
 Extract of rhubarb, $\frac{1}{2}$ drachm (2 grams),
 Extract of opium, 15 grains (.97 gram).

Make one hundred pills. Take one four times a day.

Or this :

Aloes and myrrh, each 2 drachms (8 grams),
 Extract of nux vomica, 12 grains (.78 gram),

Make forty pills, take one three times a day.

General faradization and central galvanization have been used with very satisfactory results. Exercise, too, must be carefully regulated according to the patient's strength, and increased by slow degrees as health returns. (See Women, Diseases of.)

SUPPRESSION OF THE MENSES—AMENORRHEA.

Women in the full enjoyment of health may have the discharge arrested suddenly, from exposure to cold, sudden fright, or any strong mental emotion. In this case there are headache, pain in the limbs, back, and loins, full frequent pulse, and other symptoms of fever. The foot-bath is to be used as early as possible, or the patient may sit with the lower part of the body immersed in a tub of water, at the temperature of one hundred degrees, for twenty minutes or half an hour, and after being carefully wiped dry, she is to be well wrapped up and placed in a warm bed. Two or three of the *pills of rhubarb and aloes* are to be taken every three or four hours, until the bowels are freely opened; and, to promote perspiration, eight or ten grains of *Dover's powder* may be given every six hours, until three or more doses are taken. This treatment, conjoined with light nourishing diet, or abstinence, if the feverish symptoms run high, seldom fails to bring back the discharge. But if the patient be neglected, or if the treatment adopted fail to produce the desired effect, the menses may not appear at the next expected period, and the suppression becomes chronic. In many cases, again, the obstruction is the result of general bad health, and comes on slowly; the discharge either gradually diminishing in quantity or appearing at unusually protracted intervals, until at length it ceases entirely. The health for

the first month or two may not suffer materially, but the important function of menstruation cannot be long suspended without producing a series of morbid symptoms. The balance of the circulation may be deranged, and determination of blood to different organs may take place, and give rise to hemorrhage (discharge of blood) from the lungs, stomach, bowels, or nose. The latter occurs most frequently, and is a salutary effort of nature to relieve the patient. The digestive organs frequently suffer, the tongue becomes foul, the appetite impaired, and the bowels constipated or otherwise disordered. The lower part of the abdomen is at times swollen and painful, and the breasts are sometimes tense and tender, or painful when pressed upon. Many women are troubled with various nervous diseases, as hysterics, spasms, etc., while the menses are obstructed, and recover entirely when the healthy function of the womb is restored.

In the treatment of chronic suppression of the menses, we must in the first instance endeavor to restore the general health. If there be a greater inclination to sleep than is compatible with health, lassitude, occasional giddiness, and a sensation of fulness or weight in the head, full pulse, an overcharged state of the veins, a more or less turgid appearance of the countenance, suffusion of the eyes, slight palpitation of the heart, and other symptoms indicating plethora, or repletion of the blood-vessels, the bowels are to be kept freely open, and spare diet, abstinence from wine or malt liquor, early rising, and regular exercise in the open air, must be strictly enjoined. When, by these or other means suited to the circumstances of the case, the system is sufficiently lowered and the general health improved, the menstrual flux will probably return without the assistance of remedies which are understood to exercise a specific influence on the womb; but if the discharge fail to appear, we must then have recourse to *preparations of iron*; and at the period when the patient feels as if she were about to be unwell, the *hip-bath*, and the *application of hot fomentations* to the lower part of the belly, are to be repeatedly employed. The repeated application of mustard poultices to the breasts has been known to bring back the menses after they had been a long time suppressed. But it must be kept in mind that these remedies are *only to be used at the periods when the menses ought to appear, or when they seem disposed to flow*; and if there be no symptoms to indicate these periods, they should be employed during three or four days every month, for four or five months in succession, or longer if necessary; the regimen and diet, as above directed, being strictly followed during the intervals.

These prescriptions are used by physicians :

Powdered savine, 1 drachm (4 grams),
 Oil of savine, 6 drops (.3 gram),
 Extract of gentian, as much as is necessary to make sixty pills.
 Dose.—From two to six pills three times a day.

Or this simple combination :

Powdered aloes, 1 drachm (4 grams),
 “ myrrh, $\frac{1}{2}$ drachm, (2 grams).
 Extract of liquorice, as much as may be necessary to make fifty pills.

Take two or three pills, three times a day ; or,

Pills of pulsatilla, of three grains each (.19 gram), three times a day.

Of late years, electricity in the form of localized faradization, external and internal, has been much used for suppression, and in chronic persistent cases has proved of great value. (See Electro-Therapeutics.)

No one is justified in administering remedies with the intention of bringing back the menses, without being satisfied that the suppression is not the result of pregnancy. To neglect this precaution, or to mistake the natural for a morbid suspension of the discharge, might lead to the most serious consequences. It should also be borne in mind that suppression of the menses is more frequently the effect of other diseases than a disease of itself ; when merely symptomatic, the principal indication is to remove the disorder on which it depends ; but at the same time we should not neglect to use the necessary means to restore the healthy functions of the womb, because the absence of the menstrual discharge always increases any disorder with which it may be complicated. In all cases of this description, however, it would be improper to use medicines internally, with the intention of stimulating the womb, inasmuch as this effect cannot be produced without at the same time exciting the diseased organ on which the suppression depends ; and we must therefore trust to diet, leeching, the warm hip-bath, and other local means above prescribed, conjoined with treatment suited to the principal disease.

PAINFUL MENSTRUATION—DYSMENORRHEA.

Symptoms.—This is a very common disorder, and is a source of great suffering to many women. Two or three days before the

discharge appears, the patient complains of pain in the back, loins, and lower part of the belly, irritation of the stomach, constipation of the bowels, general uneasiness and irritability of temper. The latter symptom, however, is not constant. The discharge comes away at first in drops, accompanied with increased suffering. The pain extends from the loins and lower part of the abdomen to the hips and thighs. The belly may be swollen from flatulency. Sometimes there is considerable pain and difficulty in voiding urine, or it is altogether suppressed during the first day or at the time the symptoms are most urgent. The pain is not constant, is much more severe at one time than another, and generally ceases with the discharge, which is generally scanty, although it may continue to flow three or four days, or even longer. At the commencement of the disorder the patient may experience pain only during the first day of the discharge, but the suffering gradually becomes more severe and of longer duration, until at last from eight to fifteen days of every month are passed in this manner; the general health, spirits, and vigor decline, and after many years of unceasing bodily or mental distress, at one period suffering acute pain, at another dreading its approach, the constant irritation of the system, which has been unavoidably kept up, frequently induces consumption, organic disease of the womb, or some other fatal disorder, and the patient is carried off.

Treatment.—The warm hip-bath should be employed three or four times daily; this has considerable effect in increasing the discharge, and mitigating the pain; and the bowels are to be kept open by mild laxatives. In general it is found necessary to administer *opium*, in the dose of one or two grains, every four or five hours, or at longer intervals, according to the circumstances of each particular case; or three grains may be passed up the rectum.

The following prescriptions have proved themselves useful in these cases:

Fluid extract of scutellaria, 1 ounce (32 grams),
Compound decoction of aloes, 1 ounce (32 grams).

Dose.—From one to three teaspoonfuls every three hours.

The following pills contain ingredients that are pretty sure to relieve painful menstruation:

Cannabis indica, $\frac{1}{2}$ drachm (2 grams),
Camphor, $2\frac{1}{2}$ drachms (10 grams),
Extract of belladonna, 20 grains (1.29 grams),
Sulphate of quinine, $\frac{1}{2}$ drachm (2 grams),

Powdered gum arabic, as much as may be necessary to make 100 pills.

Take one every three or four hours until relieved. Stop when the throat becomes dry or the vision is affected.

Tincture of *pulsatilla*, in doses of one to five drops every half hour, will sometimes give great relief.

Mild galvanization of the abdominal region and lower part of the spine is a most valuable method of treatment in these cases. It should be used in the intervals only.

Some preparation of iron should be given during the intervals. If the patient be of scrofulous habit of body, the *iodide of iron* is to be preferred; if it produce slight nausea, giddiness, and headache, the dose should be diminished, or the medicine altogether discontinued for a time.

In some cases painful menstruation comes from a contracted or badly formed womb, and can only be relieved by surgery or by special and local treatment.

EXCESSIVE MENSTRUATION—MENORRHAGIA.

Some women menstruate much more freely than others, and yet enjoy perfect health. But when, in any individual case, the menstrual discharge lasts longer than usual, or, lasting the usual time, is remarkably profuse in quantity, the condition is one significant of some disease. It may be that there is an impaired condition of the blood, or some disorder of the circulation; or there may be disease of the uterus itself, or of the surrounding organs. Profuse menstruation occurs when the system is plethoric, and also when it is debilitated and relaxed. One of the worst causes of this menstrual irregularity is excessive matrimonial indulgence, which induces an irritable and congested state of the uterus and its appendages. Entire abstinence in this respect is essential in the management of the disorder under consideration.

Inmoderate flowing of the menses cannot last long without the patient experiencing a variety of symptoms arising from deficiency of blood in the system. She gradually loses strength, and becomes exceedingly languid; the breathing is hurried on any ordinary exertion; the face is pale and contracted, or may appear bloated and fuller than natural, and there is a livid circle round the eyes; the appetite is greatly impaired; the bowels are constipated; and at night the feet and ankles are swollen. Symptoms indicating a deficiency of blood in the brain are often superadded to these; headache, giddiness, and ringing in the ears are complained of; there is considerable nervous irritability, the patient being disturbed by the

slightest noise; the pulse is quick, weak, and easily excited; and palpitation or fluttering at the heart is brought on by slight exertion.

Treatment.—The treatment must of course be varied according to the condition of the patient and the cause of the disease. If that cause be debility, the chief attention must be directed to the restoration of health by tonics, nourishment, exercise, and fresh air. Iron will be found of service in this condition. Cold hip-baths, and vigorous rubbing of the skin with coarse towels, will aid in restoring the circulation, care being taken at all times to keep the feet and limbs comfortably warm.

If the patient is of full and robust habit, a different course of treatment will be required. The bowels must then be kept freely open by saline aperients, the diet must be sparing, and all stimulants, even coffee, avoided.

These prescriptions have stood the test of time for these conditions:

Tincture of *cannabis indica*, in doses of ten drops (.5 gram) four times a day.

The fluid extract of ergot, in doses of half a teaspoonful (2.5 grams) two or three times a day.

Ergotine, in doses of three grains (.19 gram) in a pill four times daily.

Excessive menstruation is often a symptom of uterine disease; it may be of tumors within or without the cavity of the womb, etc., in which case it will be impossible for an inexperienced person to form any satisfactory opinion of the case, or to distinguish between an excessive discharge at the menstrual period and bleeding from some cause independent of menstruation. Skilled advice should be sought in all cases of doubt, since prolonged uterine hemorrhage, from any cause, is always accompanied by danger.

The immediate treatment during a profuse flow consists in keeping the patient perfectly quiet upon her back, and the application of cold water by means of towels to the lower part of the bowels and to the bleeding parts. Cold and acid drinks should be given, and all hot drinks, even tea, strictly prohibited. The room should be cool and quiet, conversation with the patient avoided, and an opiate administered to calm the nervous system. If these simple measures do not speedily check the flow, no time should be lost in obtaining competent medical advice, as it may be necessary to make applications directly to the womb, or even to plug the vagina firmly with cotton.

CESSATION OF THE MONTHLY DISCHARGE—CHANGE OF LIFE—TURN OF LIFE.

The cessation of the menses being a natural process, and not a disease in itself, we may safely leave nature to accomplish this salutary change in the system, and should carefully avoid interfering, unless symptoms occur to authorize the employment of remedial measures. The treatment in ordinary cases consists in attention to diet, which should be light, nourishing, and easy of digestion; in regular exercise in the open air, care being taken to avoid exposure to cold or damp; in wearing warm clothing, and paying great attention to keep the feet warm; in the occasional administration of *castor-oil*, or any other mild medicine, if the state of the bowels require the aid of laxatives; and in keeping the mind tranquil.

The nervous symptoms, which are frequently very distressing, may generally be controlled by bromide of potassium.

Various symptoms occasionally occur which lead women to believe themselves pregnant: besides the absence of the discharge at the usual monthly periods, the breasts become enlarged, tender, and sometimes painful; the belly is gradually distended from flatulency collected in the bowels, and there is sickness, and sometimes vomiting in the morning; but these symptoms may easily be relieved by means of the usual remedies for expelling flatulence, viz., purgatives and active exercise.

MENTAGRA. (See Barber's Itch.)

MENTAL THERAPEUTICS.

This term is applied to the treatment of disease through the mind of the patient. Systematic treatment of this kind is rarely used, but unconsciously all physicians use it. It is almost impossible to treat a patient without influencing his mind, more or less, and thereby affecting his symptoms. Patients are themselves unconsciously affected in the same way. If they have confidence in a physician, and great expectation of what he will do, or if they have much expectation of any remedy they are using, that physician or mode of treatment will do more for them than a physician or remedy that they distrust. Of the four influences that cure disease—medicine, hygiene, diet, and mind—the latter is oftentimes the most important, all the other three being powerless without it. (See Action of Mind on Body.)

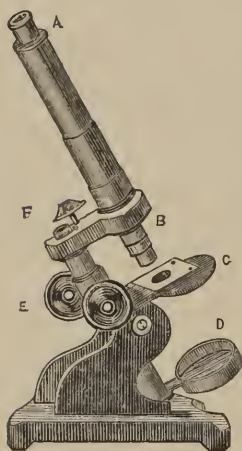
MICROSCOPE.

The microscope is an instrument that is now quite familiar to many who know little or nothing of the science of medicine.

The accompanying cut represents one of the more common forms of microscope. The tube *A B* contains the lenses. Those at *A* form the *eye-piece*, and those at *B* the *object-glasses*. The specimens to be examined are put on *C*, on which the mirror *D* throws the light. The apparatus is adjusted at *F* and *E*.

Some microscopes have three eye-pieces and several object-glasses. Microscopes magnify in all directions, and *many thousand times* the measurement of the object examined.

The microscope has wrought a great revolution in the science of medicine. It has given a new impetus to the study of disease, and has really created an era in science.



It informs us of the constitution of the blood, of the bones, and of the various tissues, secretions, and excretions of the body in health and in disease. By its aid we can distinguish the mucous secretions of the urethra, the bladder, the mouth, and the vagina. By its aid we can detect in the spermatic fluid the presence or absence of spermatozoa. By its aid we can determine the existence of that most serious affection of the kidneys—Bright's disease. (See Bright's Disease.) By its aid we can study a large number of diseases of the brain and spinal cord, of which without it we could know little or nothing. By its aid we can determine the internal structure of tumors, and decide in regard to the probabilities of life or death with those who suffer from them. By its aid we can detect the stains of blood, and thus help to convict the guilty criminal, or acquit the innocent. By its aid we now know, or think we know, the mysterious sources of many of our most terrible diseases; that ague is caused by a spore in the atmosphere, and that a large number of our fevers are transmitted by the same agency; that the water we drink and the air we breathe are always filled with animalcules and fungi, in number and variety past comprehension. By its aid we have recently solved the mystery of that loathsome disease trichinosis (see Trichiniasis), and discovered that the worm found in the flesh of the hog is propagated by millions in the muscles of

those who carelessly eat it raw or partially cooked. And yet microscopic science is still in its infancy. Its proudest triumphs are in the future.

MILK ABSCESS—BROKEN BREAST.

Inflammation may attack both the breasts at the same time, but is generally confined to one only; and it often happens that after one is healed the other becomes inflamed.

Symptoms.—The acute form of this affection usually commences three or four days after delivery; the breast becomes hot, painful, swollen, hard, and red at particular parts or over its whole surface. The local symptoms are accompanied with fever, which is more or less severe according to the extent and intensity of the inflammation. Sometimes the pain becomes excruciating, and is increased by the slightest movement; the patient is deprived of sleep, the whole breast is enlarged, and the swelling and pain even extend to the arm-pit. In some cases the breast acquires a lobulated or knotted appearance, as if there were several distinct tumors. This disease requires *prompt* treatment, lest an abscess form, producing a “broken breast.”

Treatment.—The first step is to prevent the inflammation terminating in the formation of matter. But the means usually employed for this purpose are not likely to be successful unless resorted to at a very early stage; and in numerous instances, in spite of the most active remedies, suppuration cannot be prevented. The bowels ought to be freely acted upon by repeated doses of *Epsom salts*, *Seidlitz powders*, or any other cooling saline purgative. Low diet is to be strictly enjoined; and the breasts are to be drawn at proper intervals by means of the breast glass or pump, this operation being performed as gently as possible.

Rubbing the breast with the hand, coated with warm oil, is also an efficient means of withdrawing the milk.

If cold applications increase the patient's suffering, warm linseed or bread poultices are to be substituted; or the well-known popular mode of applying warmth, called by nurses “bowling the breast,” may be employed. A wooden bowl, well heated by immersion in boiling water, is to be wiped dry, and the breast, being properly protected by flannel, is then to be placed in it, and supported by a suitable bandage. The dish retains the heat a considerable time, and thus an equal degree of warmth is constantly applied, under the soothing influence of which the milk often flows copiously, to the great relief of the patient.

To moderate the feverish symptoms and alleviate the pain, the subjoined draught may be given every four hours:

Mindererus' spirit, 3 drachms (12 grams),
Solution of the acetate of morphine, from 5 to 8 drops (.25 to .4 gram),
Water, sweetened with a little sugar, 2 ounces (64 grams). Mix.

The tincture of belladonna, in doses of five drops (.25 gram) every four hours up to the point when the throat is dry, is good treatment for this condition, especially when taken early. Belladonna, it should be remembered, dries up the milk.

INFLAMMATION OF THE MAMMARY GLANDS (*mammalis*)—INFLAMMATION OF THE BREAST.

In this disease use fluid extract of poke-root, in doses of from fifteen to twenty-five drops (.75 to 1.25 gram) every three hours. The following is likewise recommended:

Tincture of belladonna, 1 drachm (4 grams),
Tincture of digitalis, 1 drachm (4 grains).

Dose.—Ten drops every four hours.

MILK FEVER.

It frequently happens that women are affected, on the third day after delivery, with headache and feverish symptoms, generally preceded by slight shivering or a sensation of chilliness; the skin becomes hot, the pulse full and quick, the tongue dry, with considerable thirst, and the breasts are turgid, and tender or painful.

To counteract this state of febrile excitement, the child ought to be applied to the breasts at an early period after delivery, and this should be done repeatedly until the milk begins to flow. On the third morning a mild dose of castor-oil (half an ounce), lenitive electuary, or rhubarb and magnesia, should be taken; but cooling saline purgatives are to be preferred if there be a tendency to fever.

If the breasts become much distended with milk, and if relief be not afforded by frequently putting the child to them, it will then be advisable to draw off two or three spoonfuls of the milk by means of a breast glass or pump.

To subdue the feverish symptoms, two scruples or more of nitre dissolved in barley-water may be given in the course of the day;

the bowels are to be pretty freely acted upon by laxative draughts, as above directed; and low diet must be strictly enjoined.

MILK SICKNESS.

This is a peculiar disease, which prevails in certain districts of the West and South. It derives its name from the fact that it is acquired from using the milk, butter, and cheese obtained from cows affected with a peculiar poison, supposed to be caused by feeding upon some poisonous plant, although nothing positive is known as to the cause.

Dogs which lap the milk of cows thus poisoned are soon seized with trembling, and frequently die of the disease. The eating of the beef, mutton, or veal of affected animals also induces an attack of the disease.

Symptoms.—An attack of the disease is usually preceded by a feeling of languor and general debility, although it sometimes comes on suddenly, with nausea, vomiting, great thirst, very offensive breath, and obstinate constipation.

Treatment.—The following prescription is highly recommended:

Infusion of senna-leaves, 1 pint,
Epsom salts, $\frac{1}{2}$ pint.

Dose.—From two to four table-spoonfuls. If the first dose is vomited, repeat until it is retained.

MISCARRIAGE AND ABORTION.

The expulsion of the child from the womb at any time between the seventh month and the full term of utero-gestation is called *premature labor*; and when the fetus is expelled before the seventh month the process is called *miscarriage* or *abortion*. In the latter case the fetus is either already dead, or its different organs are not sufficiently developed to admit of life being sustained.

Causes.—So many circumstances in life act as occasional causes of miscarriage that the limits of this work will only allow us to notice some of the principal of them, among which may be mentioned various mental emotions, as sudden fright, anger, joy, disappointment, and distress of mind from whatever cause; violent coughing, excessive purging or constipation of the bowels, profuse blood-letting, falls, blows, sea-sickness, the extraction of a tooth, and the various causes which excite undue determination of blood

to the womb, as over-exertion in walking, riding, or dancing, errors in diet, and immoderate sexual indulgence.

Some women are so constituted that any of the above-mentioned causes may readily induce miscarriage, whereas in others it cannot be brought on by the strongest moral or physical causes. Numerous cases are recorded of violent means having been unsuccessfully employed to procure abortion; and it cannot be too generally known that even where these criminal measures do succeed, it is often at the expense of the woman's life. The symptoms preceding or accompanying miscarriage vary according to the period of pregnancy at which it occurs; during the first two months the embryo or fetus is discharged without pain or much loss of blood, and it often happens at this early stage that the woman is not aware she has miscarried, and attributes the discharge to the return of the menses. At a later period the death of the fetus is announced by great depression of strength and spirits, palpitation of the heart, paleness of the countenance, fetid breath, a sensation of coldness and weight at the lower part of the belly, mucous discharge from the genital organs; sometimes there is frequent desire to void urine, and after the middle of the fifth month the movements of the child cease to be felt. These signs are followed by more or less profuse flooding, and clots of coagulated blood may be observed, which served to distinguish this discharge from that of the healthy menstrual fluid, which never coagulates. The flooding is accompanied with acute pain, extending from the navel to the genitals; and bearing-down pains, resembling those of regular labor, are occasionally felt. At last the fetus comes away, and is generally enveloped in its membranes when the accident occurs before the third month of pregnancy; in the following months the membranous bag containing the fetus bursts, and the waters are immediately discharged; then the fetus comes away, and finally the after-birth.

Sometimes symptoms threatening abortion continue during two or three days; the woman is first attacked with rigors or shiverings; shortly afterwards the pulse becomes quick and full, the skin hot, with thirst and other signs of general excitement, accompanied by a sensation of weight and fulness at the lower part of the belly and loins, followed by discharge of blood from the womb in larger or smaller quantity, with pains at intervals resembling those which take place at the commencement of natural labor. When such symptoms are manifested miscarriage is very likely to occur, yet by timely and judicious treatment this accident may be averted, the bearing-down pains may be suspended, and the flooding checked, and the womb may retain the child until the full period. But

when the mouth and neck of the womb soften, and the bag of waters begins to protrude, while the discharge and contractile pains continue, all our efforts to prevent miscarriage will be fruitless.

Miscarriage takes place most frequently during the first three months of pregnancy; when it happens in consequence of the gradual decay and death of the fetus, which is by far the most common cause, it is less dangerous than when it occurs suddenly from accidental or violent causes; under all circumstances, the danger increases with the advance of pregnancy. Sometimes the after-birth is retained for several weeks after the fetus has been expelled, becomes putrid, and is discharged in detached pieces; or it may remain during several months, and then be thrown off in a shrivelled or partially dried state, or in the form of a fleshy mass.

Treatment.—When, from the symptoms above mentioned, we have reason to believe that the fetus is dead, it would be useless to attempt preventing miscarriage; but if signs of plethora (fulness of blood) and general excitement be manifested, together with the local premonitory symptoms already noticed, we then have it greatly in our power to ward off the threatened accident, and this may even be effected after flooding and irregular pains have been experienced; but if the waters be discharged, miscarriage is inevitable. In all cases, but more especially where the woman is nervous and of an irritable temperament, it is advisable to administer an opiate—half a grain (.032 gram) of *morphine*, or fifteen drops (.75 gram) of *laudanum*—immediately after the bleeding, in order to allay the bearing-down pains or contractions of the womb. The diet should consist of light farinaceous food, as arrowroot, sago, toasted bread, etc., and lemonade, soda-water, or any other cool beverage may be drunk freely. But the most essential part of the treatment, without which neither the above nor any other means are likely to be of much service, is mental and bodily quietude. This must be strictly attended to from the time that premonitory symptoms make their appearance until all danger is past. The apartment should be large and well aired, and the patient should lie on a mattress or couch, with the body lightly covered. In the event of flooding coming on, cold applications are to be assiduously employed, as before directed, until the discharge is arrested. When the *pains* and flooding have ceased, a little *castor-oil*, with from ten to fifteen drops of *laudanum*, or a mild dose of *rhubarb* and *magnesia*, may be given to act gently on the bowels.

When all our efforts to prevent miscarriage prove ineffectual, and the fetus is expelled, while the after-birth is retained in the womb and the flooding continues, the *ergot of rye*, or plugging the vagina, in the manner recommended under the head of *Flooding*,

should be employed; or the *acetate of lead*, which has a powerful effect in subduing hemorrhage, may be administered.

The cold hip-bath, or sponging the lower extremities and lower part of the belly with cold vinegar and water, strict attention to diet, moderate but regular exercise, cooling saline laxatives, and abstaining from conjugal intercourse during the first five months of pregnancy, will be found the best preventives of miscarriage.

Women who have once miscarried should be especially careful of themselves at the time corresponding to the menstrual period, and for two or three days before and after. The recumbent position should be maintained at such times, and the diet should be moderate. Hot drinks of all kinds must be avoided.

MOLLUSCUM.

Molluscum is a little soft, pea-sized tumor, with constricted base, central depressed orifice, and whitish curdy contents. It occurs in numbers upon the face and other portions of the body in children, and is likewise met with in adults. They are harmless; although, when occurring, as they frequently do, upon the eyelids, they may occasion serious inflammation of the eye. They remain at times for months without undergoing any change in appearance, and finally become inflamed and suppurate, or gradually wither away. The affection often attacks several children in a family or neighborhood, and has been described as a contagious affection. The majority of those affected by molluscum have warts upon the hands.

Treatment.—The little tumors can be easily destroyed by squeezing out their contents, and touching the interior of the sac with a stick of nitrate of silver.

MORTIFICATION—GANGRENE.

The appearances of a mortified part are very striking, and when once seen can seldom be mistaken afterwards. They are best observed in cases of mortification from cold, or in that peculiar form of the disease which often attacks the extremities of old people. The parts so affected lose gradually all feeling, the natural heat is also lost, and the mortified portion of the body or limb becomes quite cold; it is of a brown, livid, or black color: decomposition now takes place sooner or later; the scarf-skin is raised up in little tumors from the gas which is disengaged by the decomposing flesh; a very offensive odor is emitted, and any discharge which may accompany the mortification is of a highly fetid kind. The dead part is now either removed from the body by a natural process, or excites a species of low fever, which eventually terminates in death.

It should, however, be remarked that in many cases mortification is not so complete as we have just described it to be, but is preceded by what medical men call *gangrene*. Here the parts are not completely dead, but are more or less rapidly approaching to a state of mortification; the powers of life in the part are much diminished, but not quite extinct; some feeling still remains, and the blood circulates in some of the vessels.

Causes.—One of the most frequent causes of mortification is unquestionably inflammation. When certain parts of the body are violently inflamed (more especially if the inflammation be of an erysipelatous kind) they are subject to partial or complete mortification, and this is the more to be dreaded in persons of dissipated habits, or those whose health is reduced by poor food, bad air, and irregular modes of life.

Symptoms.—When mortification is about to take place, we generally find that the pain and fever which accompanied the inflammation suddenly diminish or altogether subside; the affected part gets soft, and loses its natural heat and feeling, while at the same time it assumes a dark or livid color; the scarf-skin soon becomes separated from the true skin underneath, and sometimes vesicles filled with fluid, and resembling small blisters, appear on different points of the mortified surface. Our description is confined to mortification of *external* parts, for when any of the internal organs are attacked by mortification, the case is altogether beyond the reach of medicine.

The life of any portion of the body cannot be sustained without a due supply of blood and nervous power; hence any cause which suspends or interrupts this supply may excite mortification. Thus long-continued pressure will often occasion mortification, as we frequently see in cases of typhus fever, etc. Cold, also, is often another cause; and people should always remember that when parts which have been frost-bitten or frozen are suddenly warmed, they are very apt to be attacked by gangrene and mortification.

Treatment.—When the inflammatory symptoms have been removed, or when from the beginning the mortification is attended with low nervous fever, and the patient seems to be sinking under the disease, it will be absolutely necessary to support his strength by a mild, nourishing diet, by stimulants and tonics, and by cordials. The best cordial, perhaps, which we can give is a wine-glassful of Sherry or Madeira wine, every four hours or oftener, according to the necessities of the case.

As in many cases of mortification the pain, restlessness, and anxiety of the patient are distressing, we must endeavor to mitigate

the pain and relieve the suffering by opiate medicines. These may be combined with the quinine, if the latter be given, or with a few grains of nitrate of potash or camphor. As it has been proved that in many cases opium produces a stimulating effect, it will be more prudent to administer half a grain (.032 gram) of the acetate of morphia every five or six hours.

However, in the peculiar species of mortification which attacks the toes and feet of old people, we may give one grain (.065 gram) of solid opium every three or four hours with advantage.

The *local* treatment of mortification is very simple. The best thing that we can do is to envelop the mortified part in a large poultice, and renew the latter as often during the day as cleanliness may require. The following poultices are those most frequently recommended by surgeons:

Charcoal Poultice.—Add about two ounces (64 grams) of finely powdered charcoal to half a pound (192 grams) of common linseed poultice.

Beer Poultice.—Take of the grounds of strong beer half a pint; add as much oatmeal as will make it pretty thick, and then stir it up.

Yeast Poultice.—Add to an infusion of malt as much oatmeal as will render the substance of a proper thickness, and then add a spoonful of yeast. When the mortified portions are being detached, and the patient complains of much pain, we may add two or three teaspoonfuls of laudanum to the poultice.

To counteract the fetid discharge and smell which always attend cases of mortification, we may use with advantage the *chlorine lotion*, composed of one part of chloride of lime to eight parts of water.

MOUTH, INFLAMMATIONS OF—(*Stomatitis*).

Children are most liable to diseases of the mouth.

Simple inflammation of the mouth is recognized by the redness, swelling, and soreness of the gums and tongue.

It is treated by solutions of *marsh-mallow*, or *borax*, or *chlorate of potash*.

Thrush.—The symptoms of this disease are small whitish points and patches in the mouth. It is sometimes accompanied by fever. It is connected with a vegetable growth—the *oïdium albicans*.

One of the best remedies for this disease is *chlorate of potash*, in doses of from 5 to 30 grains (.32 gram to 2 grams), according to age of patient. It may be given in solution. (See Chlorate of Potash.) Chlorate of potash is almost a specific for inflammations of the mouth.

When the child is feeble it should be supported by tonics.

Parents should avoid tampering with their children too much in this or similar affections. It is best to be on the safe side, and use only simple measures until the physician arrives.

It is generally safe to use chlorate of potash in almost any form of inflammation of the mouth.

Canker of the mouth is a very disagreeable and sometimes protracted disease.

It consists of an *ulcer* that forms on the gums, or lips, or cheek. It is of a whitish, grayish, or yellowish color. It is usually of a very offensive odor.

The ulcer may be washed with *glycerine* and water, weak solutions of *carbolic acid* and water (see Lotions), and may be touched with "bluestone" or *sulphate of copper*. Everything should be done to strengthen and sustain the patient.

Gangrene of the mouth is a very serious disease. It begins with an ulcer on the cheek or gums. In time this spreads and assumes the character of mortification. The discharge is of a most offensive character. The disease may extend even to the bone.

This disease is caused by poor and insufficient food, and by *bad air*. It is an alarming affection, and needs the best possible skill.

The great thing is too strengthen and sustain the system of the child by stimulants, tonics, and nourishing food. Beef-tea should be used freely, and if necessary brandy or whiskey may be given.

To the ulcer we may apply lotions of *carbolic acid*, or of *permanganate of potash*, or *sulphite of soda*. (See Lotions.)

This formula may be used:

Carbolic acid, $\frac{1}{2}$ drachm (2 grams),
Chlorate of potash, 1 drachm (4 grams),
Water, 5 ounces (160 grams).

Apply to the part affected.

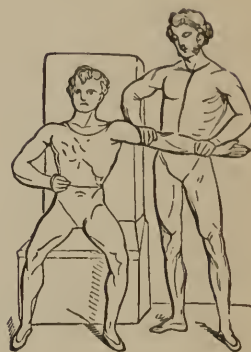
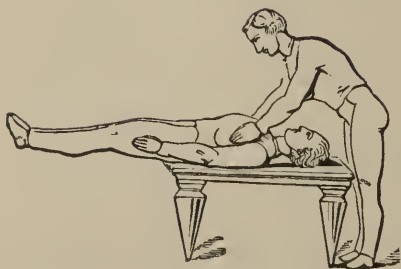
The above is good in all kinds of sore mouth.

Nursing sore mouth.—This is the familiar complaint of those who nurse children.

Like all other inflammations of the mouth, it is best treated by chlorate of potash. For adults it may be given in large doses, say 20 grains (1.29 gram).

MOVEMENT CURE—MASSAGE.

The Swedish Movements, that were originally proposed by Ling, have recently obtained a deserved popularity. Establishments for conducting this method of treatment are already in operation.



OPERATIONS OF THE MOVEMENT CURR.

Strictly speaking, all muscular exercise—walking, running, riding, jumping, skating, riding velocipedes—is a part of the movement cure. In our establishments, which are, or should be, conducted by experienced hands, the movements are carefully elaborated and systematized by the aid of machinery and various contrivances. In short, the “movements” are simply *exercise refined and systematized*. They exercise portions of the body, especially of the internal organs, that are little affected by ordinary activity. Hence their great benefit in many cases of chronic disease of these internal organs, especially of the abdomen.

General faradization and the “movements” both cause many muscular contractions, and in this way increase the processes of waste and repair in the system. Both are useful in dyspepsia, hypochondria, constipation, paralysis, and nervous exhaustion and other conditions of debility.

EXERCISES OF THE MOVEMENT CURE.

We present herewith some cuts representing a few of the exercises and manipulations of the movement cure. They are taken from Roth's treatise on the subject. These are but a few of many that might be described. Mechanical appliances of various kinds are employed. Some of these are put in motion by steam-power.

Gymnastics are very properly included under *Movement Cure*. The gymnasium is really an establishment for the preservation of health and the cure of disease by muscular movements. The chief difference between the two lies in this, that in the one case the movements are mostly passive, in the other mostly active. The movement cure is chiefly designed for those who are partial or complete invalids, the gymnasium for those who are comparatively well. The one is used to *regain* health, the other to *retain* it.



DUMB-BELLS.

This distinction is a very general one, and is by no means always or necessarily observed. Invalids who are quite weak may be much benefited by a judicious use of light gymnastics, and those who are

in comparative health may also be profited by the passive exercises of the movement cure.

Gymnastics have been recommended by physicians from very early periods. The Greeks were famous for their athletic games.

Concerning the dress of the gymnast Mr. Watson remarks:

"The dress opens in front, and is both more convenient and more beautiful than one which opens behind. It is so constructed that the wearer's limbs are as free as air; that she can even clap her hands, with arms vertical, above her head without discomfort.

"It will be observed that the gentleman's dress is loose and comfortable. The primary object of the costume is not to exhibit rounded and shapely limbs and well-developed muscles, but to give ease and comfort to the student in all of his positions and movements. The military jacket, without unnecessary padding, is selected. It has no useless skirt, and the collar is neither high nor stiff. The trousers, which are very loose, are gathered in and buttoned at the ankle, or fastened with an elastic band or a small strap.

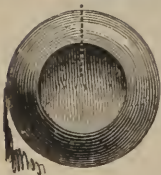
"Students may exercise in their street dresses. The gentlemen will remove their coats. The ladies will use elastic bands to sustain their skirts, so that the wearers' legs and feet may have free play. Bathing dresses will very generally be found pretty and appropriate for these exercises."

Concerning dumb-bells Mr. Watson gives these suggestions:

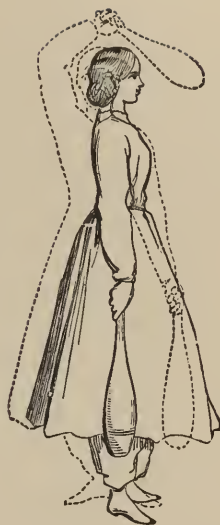
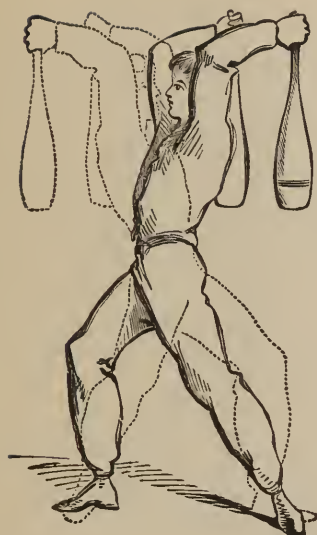
"Cast-iron dumb-bells of proper form and weight are deservedly popular among the best gymnasts. Heavy bells, however, are almost useless for exercise, affording only a few movements that serve as a test of strength. When using a single bell for this purpose, both arms should be employed to the same extent, so as to avoid a one-sided development.

"Dumb-bells weighing from three to five pounds, properly used, are sufficiently heavy for the strongest man. Be one's time never so much limited, they should not weigh more than twenty-five pounds to the pair.

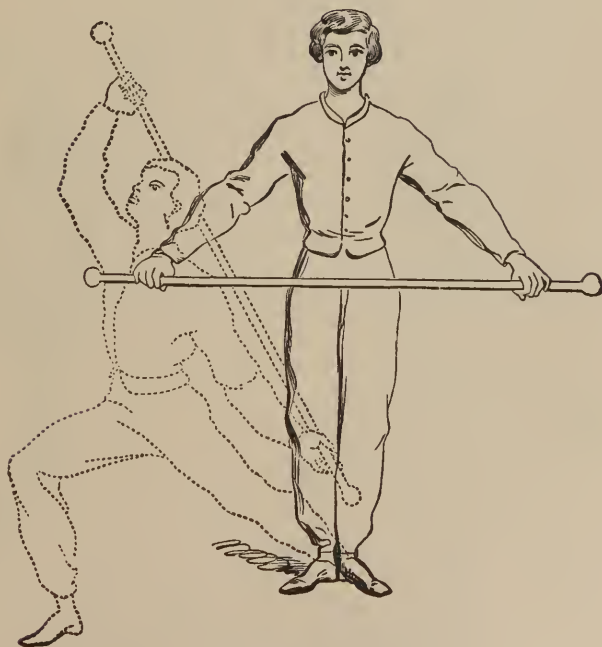
"The best and most approved dumb-bell at the present time is turned from wood. The timber should be sawed into scantlings, and well seasoned before turning it into bells. Maple, beech, birch,



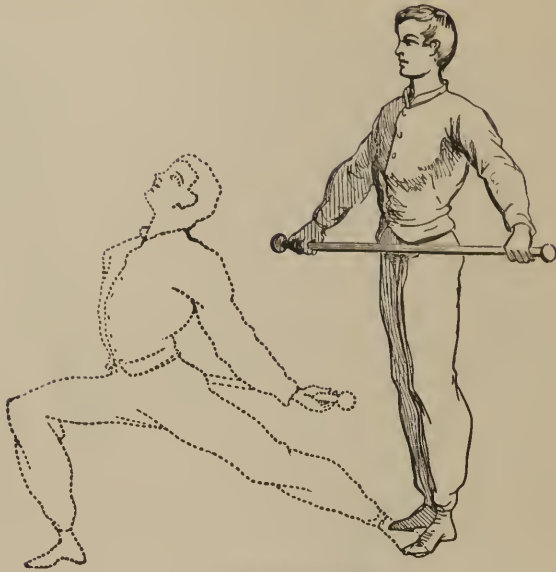
INDIAN CLUBS.



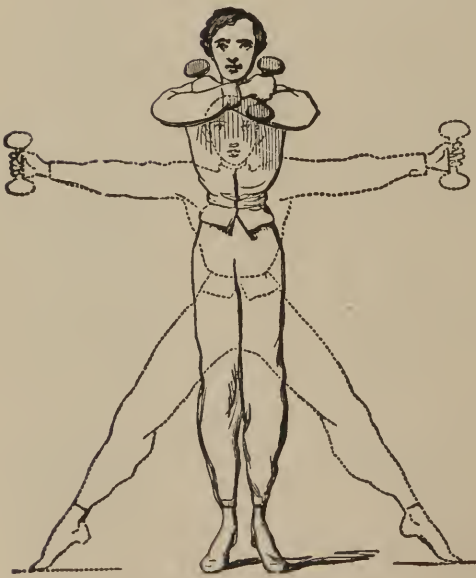
EXERCISES WITH INDIAN CLUBS.



EXERCISES WITH WAND.



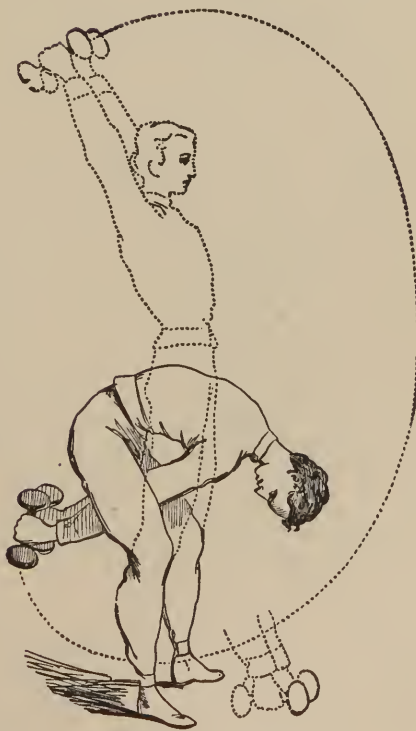
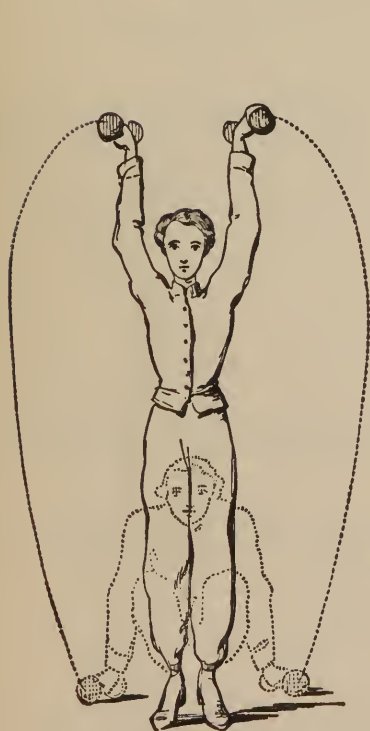
EXERCISES WITH WAND.



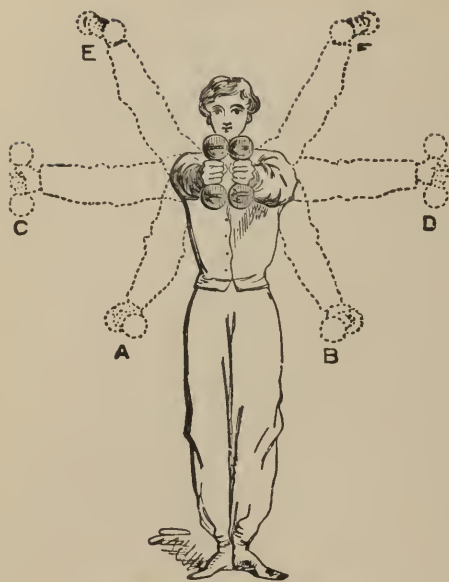
EXERCISES WITH DUMB-BELLS.



HAND-SWING, WITH RINGS



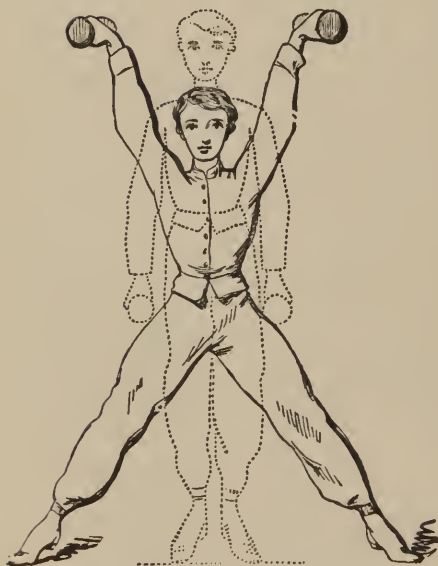
EXERCISES WITH DUMB BELLS.



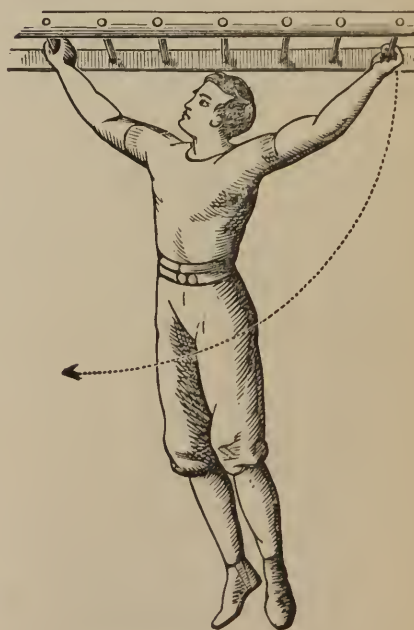
EXERCISE WITH DUMB-BELLS.



HAND-OVER-HAND ASCENT.



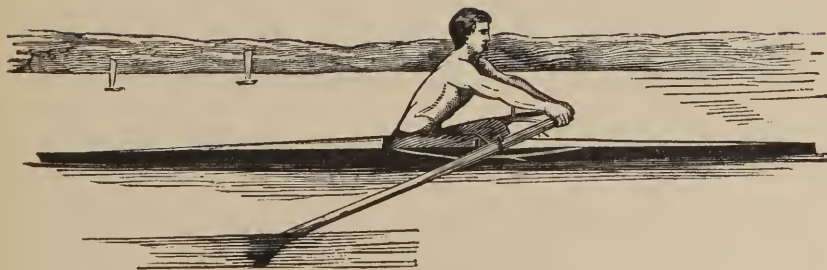
EXERCISE WITH DUMB-BELLS.



HORIZONTAL LADDER EXERCISE.



EXERCISES WITH RINGS.



ROWING IN A SINGLE WHERRY.

This, when not carried to excess, is one of the best of our methods of exercise. Boat-racing, for those who are to lead sedentary lives, is not to be commended. It is too violent and exhausting.

oak, and hickory make very good bells for family and school use. Locust is the best domestic wood for this purpose; rosewood is still better; lignum-vitæ is best of all."

From J. Madison Watson's excellent treatise on this subject, I have, by the courtesy of the author, selected a few cuts illustrating some of the exercises with the *wand*, *rings*, *dumb-bells*, and *Indian clubs*. The *dotted lines* denote the positions assumed by the operator during the exercises.

The "*Lifting Cure*" is a modification of the movement cure, and is to be so considered by those who inquire concerning it. The objection to the lifting cure is that it is too *exclusive*. The movement cure should exercise the whole body, and in a variety of ways. And yet there is no question but that some patients do receive benefit from the use of these special methods of movement.

There are those to whom any form of active or passive exercise—by whatever name it may be called—is always more or less beneficial.

It is a mistake to suppose that there is any mysterious virtue in any special method of exercises as such. Many who are benefited by a course of treatment by the lifting cure, or by the rubbing cure, or by *pounding*, or by any or all of the operations of the movement cure, would have been still more benefited by a trip into the country, a week of hunting or fishing, or by a few weeks' experience in boating. The great advantage of the movement cure is that it *systematizes* exercise, and by the novelty of its arrangements induces many to avail themselves of its benefits who otherwise would not use their muscles at all. As I have before remarked, one secret of the remarkable success of *general faradization* in nervous diseases is in the fact that it causes vigorous and repeated contractions of a large number of the principal muscles of the body.

MASSAGE, OR SYSTEMATIZED RUBBING, KNEADING, AND PINCHING, WITH PASSIVE MOVEMENT OF THE JOINTS.

This is a species of muscular exercise. It constitutes an important element of the movement cure.

Massage consists in the following processes:

1. Pinching the skin.
2. Squeezing or kneading the muscles.
3. Tapping, or striking, or slapping the surface.
4. Moving the small and large joints.

The whole body can be treated in this way, and the operation may take all the way from fifteen minutes to an hour. It is a most valuable aid to the treatment of *neurasthenia*, paralysis, and other nervous diseases.

LIFTING CURE.

This form of gymnastics is now well known, and in our large cities is quite popular. It is one of the many varieties of gymnastic exercise that are to be commended, provided it be properly carried out.

MUMPS—(*Parotitis*).

This disease is seated in the parotid gland and surrounding cellular substance. It is sometimes epidemic, and is generally believed to be contagious.

Symptoms.—It usually commences with slight shivering, followed by hot skin, thirst, and other feverish symptoms, which seldom run high. The constitutional derangement is soon followed by swelling under the angles of the jaws, gradually extending over a considerable part of the throat affected. The swollen parts feel firm and elastic, are slightly red, and tender or painful. When the tumefaction is extensive, there is some difficulty in swallowing, and pain on moving the jaws. The disease generally begins to subside on the fourth or fifth day, and in the course of a few days the neck resumes its natural appearance; but in some cases, when the swelling is diminishing at the neck, the testicles in males and the breasts in females become swollen; this continues for some days, and then disappears gradually. Sometimes, however, the testicles remain enlarged for a considerable length of time. When the disease is confined to one side of the neck, the testicle or breast of the same side only is affected. This disease occurs most frequently in children, and generally in those of scrofulous constitution.

Treatment.—The mumps seldom require medical treatment. Stimulating food and drink should be avoided; mild laxatives are necessary, and a little purified nitre dissolved in barley-water may be taken. The neck should be protected from cold by covering it with fine flannel. If the testicles or breasts become swollen and painful it will be advisable to apply leeches, and afterward warm fomentations of marsh mallow or poppy-heads, and warm poultices of linseed or bread and milk.

MUSCOE VOLITANTES, OR MOTES.

Floating dark specks before the eyes. They are not generally a serious symptom. They occur in various disturbed conditions of the brain and nervous system.

MYOPIA. (See Eye, Diseases of the.)

NAILS, DISEASES OF THE. (See Ingrowing Toe-nail.)

NASAL DOUCHE.

This is a very simple arrangement for cleansing the nasal passages in catarrh (*rhinitis*). (See Catarrh.) It consists of a bottle, with a piece of rubber tubing attached to an outlet at the bottom. To use the douche, fill the bottle partly or entirely with the weak solution of common salt or chlorate of potash, or what-



NASAL DOUCHE.



THE ALWAYS-HANDY NASAL DOUCHE.

ever is desired; place one end of the rubber tube in one of the nostrils; now slowly raise the bottle high enough so that the liquid will flow into one *nostril and out of the other*, thus cleansing both passages. (See cut.)

This is an excellent domestic remedy for catarrh of the nasal passages, but it has this disadvantage, that sometimes the fluid is forced through the Eustachian tube into the middle ear, causing serious inflammation. Caution is therefore indicated in using it. (See Catarrh.) A convenient method of applying the desired remedy to the nasal passages is by snuffing it from a common tumbler, one or both nostrils at a time, and spitting it from the mouth. (See cut.)

Plate N.



SARSAPARILLA — *Simulax Officialis*.



CUSCUTA — *Cuscuta*.



BITTER DANDELION — *Taraxacum*.



STACHYS — *Stachys*.



BITTER ALMOND — *Amygdalus*.



ANISE — *Anisum*.

NASAL HEMORRHAGE, OR EPISTAXIS. (See Bleeding from the Nose.)

NECROSIS. The death of the bones, analogous to the gangrene of the soft parts.

NEPHRITIS. Inflammation of the kidneys. (See Bright's Disease.)

NERVOUS DISEASES OF MODERN TIMES.

The types of disease, like the types of character, change with the progress of civilization. If we look closely enough into this subject we see that it could not be otherwise. All disease is an abnormal condition of the body, and is, of course, variously modified by the nature and condition of the body. As the body changes so must its diseases change. Take, for illustration, the very familiar disease which we call measles: we find that it behaves very differently with different constitutions and in different states of the system. Although there are certain characteristics by which it is to be recognized in all, yet it behaves very differently in the strong and the weak, in the phlegmatic and the nervous.

What is true of measles is more or less true of all other diseases.

Small-pox, rheumatism, the different forms of fever, diseases of the skin, affections of special organs—all are variously modified by the age, the sex, and the nature of the constitution. This fact is so well recognized in science that it may be regarded as a truism.

But the modification of disease by the constitution does not stop here. *New* diseases, or *new* phases of disease, are developed corresponding to *changes* in the constitution. The diseases of youth are different from those of infancy, of adult life from those of youth, while those of old age are different from those of adult life.

The same law applies to nations as well as to individuals. In the infancy of mankind the diseases of mankind were both fewer and simpler than at present. With the advance of civilization, with the increase in the forms of activity, with the modifications that the constitution has undergone, by the pressure, the excitement, and the manifold anxieties of modern society, there has been a corresponding change in the types of disease. Instead of a few diseases, we now have many. The few diseases of old times were, however, more fatal than the many of recent dates. Instead of a

few plain symptoms, we now have legions of symptoms—subtle, undefined, overlapping and running into each other.

In the infancy of mankind, indeed in all ages and countries prior to the last two centuries, the muscles were used more than the brain. Consequently, the predominant diseases were those which chiefly affected the muscular and vascular systems, such as fevers, inflammations, etc. In this ripening maturity of mankind, and among all *enlightened people, especially since the invention of printing, the brain has been used more than the muscles.* Consequently, the predominant diseases of our day are those which *chiefly affect the brain and nervous system.*

Within the past twenty-five or thirty years there has been observed a marked increase in the number and in the severity of what are known as *nervous diseases*. This fact has been observed not only by the profession but by the people, and is now generally accepted.

I am aware that on these subjects there is great liability to error. We are apt to judge from indefinite general impression, without regard to statistical facts. Now general impressions, in regard to changes in the types of disease, are very apt to be erroneous. And yet on this subject the general belief is, I think, correct. Statistics, so far as they go, seem to confirm this general impression.

There is no question in my mind that nervous diseases have been on the increase for the past quarter of a century, and that they are still increasing with the advance of our civilization.

The question now arises, What are *nervous diseases*? I reply, Diseases that primarily or chiefly affect the brain, the spinal cord, or the nerves that issue from them or the sympathetic system.

Paralysis is a nervous disease. It is always a result of some diseased condition of the brain, of the spinal cord, or of some of the nerves that issue from them. It may take place by reflex action from diseases of the bowels, the womb, etc.; but in such cases it takes place through the nerves. (See Paralysis.)

Neuralgia is a nervous disease. It may result from the same causes that produce paralysis. The derivation of the word itself means "pain of the nerve." It is a very distressing and very common affection, but very fortunately it is much more susceptible of relief than formerly. (See Neuralgia, Tic Douloureux.)

Dyspepsia and Constipation are frequently nervous diseases. They are usually, though not always, results of general nervous debility. They are frequently symptoms of exhaustion. Dyspepsia may result from inflammation of the stomach, from cancer, from ulcer, or other local difficulty; but in the majority of cases in our

times it is a symptom of constitutional nervous disturbance, and should be treated accordingly. (See Dyspepsia, and Constipation.)

Nervous Exhaustion (neurasthenia) is a nervous disease. The blood may be healthy in quantity and quality, the muscles may be large and firm and wiry, and withal the system may be thoroughly debilitated: no organic disease can be detected; and yet the patient is depressed, sleepless, feeble, incapable of severe exertion of mind or body. There are thousands of women in our land who spend nearly their whole lives in a condition of *nervous exhaustion*. They are never actually confined to the bed for any length of time. Perhaps they rarely consult a physician, and yet they never know what it is to be really well. To vigorous, lively health they are strangers. There are students who, during their educational career, pass through this stage between the ages of fifteen and twenty. There are young ladies who pass through this same stage perhaps for many years before they arrive at strength and womanhood. There are in our time both men and women who never know any other condition or feeling than that of nervous exhaustion. (See Neurasthenia, Nervous Exhaustion.)

Hypochondria is a nervous disease. It is probably in all cases a symptom of some disturbance of the brain or of the sympathetic system, which may be caused by some local disease, as of the liver, or stomach, or genital organs. It is oftentimes, though not always, a premonitor of insanity. This statement need not frighten those who are troubled with hypochondria, except so far as to make them vigilant to use all proper means to accomplish a cure. It was formerly supposed that hypochondria was not a disease. Physicians are now beginning to see that it is really a disease, and that it must be treated as such; and that it is curable, frequently as relievable as other diseases. It may afflict those who have exceedingly strong muscles, who have excellent good sense, and who naturally are jovial and light-hearted. In hypochondria the whole character frequently becomes changed. This change probably corresponds to some changes in the nervous system. The hypochondriac is not entirely a free moral agent. (See Hypochondria.)

St. Vitus's Dance is a nervous disease. It occurs chiefly in children, though it may be met with in adults, and even in the aged. It occurs in those whose nervous systems are in some way debilitated. It is caused probably by some subtle derangement of the spinal cord or brain, or of both. Sometimes it is confined to a single nerve, or branch of a nerve. (See St. Vitus's Dance.)

Epilepsy is a nervous disease. This also is a symptom of vari-

ous diseased conditions, and oftentimes of the most opposite character. It may occur in those who are apparently strong. (See Epilepsy.)

Spermatorrhea is usually a *nervous disease*. It was formerly supposed to be a *local* difficulty merely, a result of local inflammation. The truth is that it is like dyspepsia—usually a symptom of constitutional debility. It is more frequently a *result* than a cause. The masses of the people have very erroneous ideas on this subject. (See Spermatorrhea, and Sexual Exhaustion.)

Hysteria is a *nervous disease*. It is a symptom of some subtle, indefinable difficulty of the brain, the spine, or of the sympathetic system. Like many other nervous diseases, it may occur in those who are apparently muscular and strong. Hysteria sometimes runs into actual insanity. It is a positive disease, like hypochondria; and like hypochondria it should be treated with patience and with judgment. Like hypochondria it is very susceptible of treatment, is oftentimes relievably and curable. (See Hysteria.)

Sick Headache is a *nervous disease*. Like epilepsy it is a kind of disturbance of the nervous force, somewhat analogous to the magnetic disturbances of the heavens. Like the other nervous diseases, it may occur in those who have large, firm muscles. It is popularly supposed to be the result of "*biliousness*." Biliousness is a term that really means nothing, and is very apt to mislead. When one feels sick at the stomach we say that he is bilious. Now sickness at the stomach may result from a lack of bile as well as from overflow of it. It may result from a merely diseased condition or morbid inability of the nerves that supply the stomach. The nausea and vomiting of sick headache are frequently, like the pain in the head, the results of the nervous disturbances, and not the causes. (See Sick Headache.)

Sea-sickness is a *nervous disease*. (See Sea-sickness.)

Insanity is a *nervous disease*, and like all other nervous diseases it has probably increased with the advance of civilization. It is always a symptom of some morbid condition of the most important part of the central nervous system. (See Insanity.)

Besides these, *loss of voice*, *asthma*, may be nervous in their character. (See Larynx, Diseases of, and Asthma.)

Tetanus, or *locked jaw*, is a nervous disease. It was formerly supposed to be of an inflammatory character. It is now regarded as essentially a nervous affection. (See Tetanus.)

Hydrophobia is a nervous disease, and is treated accordingly, though unfortunately without success. (See Hydrophobia.)

Delirium Tremens, and *Chronic Alcoholism*, and *Dipsomania*,

and other similar or allied affections that arise from the abuse of stimulants and narcotics, are pre-eminently nervous diseases. (See Delirium Tremens, Dipsomania, Stimulants and Narcotics, and Inebriety.)

Convulsions of all kinds, and from whatever cause proceeding, are to be classed among nervous diseases. (See Convulsions.)

Sleeplessness (insomnia) is usually a nervous disease. It is a symptom of some disordered condition of the brain or of some portion of the nervous system. It is a symptom which in these days is exceedingly common. Prolonged and obstinate sleeplessness is one of the symptoms of impending insanity. (See Sleeplessness.)

Catalepsy is a nervous disease. This is not, however, a very common affection, and is only mentioned here for the sake of completeness. (See Catalepsy and Trance.)

Green-sickness is now regarded as a nervous disease; formerly it was confounded with anemia (poverty of blood). Recent investigations have shown that in green-sickness the blood may be in a healthy condition.

Hay Fever is a nervous disease, as is now established. (See Hay Fever.)

Writer's Cramp is a nervous disease. (See Writer's Cramp.)

General Treatment.—Nervous diseases are usually to be treated by concentrating on the system *all possible sedative and tonic influences*. While every case must be studied by itself, and treated by itself, yet this general principle will apply to nearly all the nervous diseases of our time. In connection with tonic influences it may be necessary to use remedies that have a calming influence on the system, such as the bromides, oxalate of cerium, the zinc combination, and the like.

It is not well to depend exclusively on any one tonic remedy, but to concentrate the influence of a number simultaneously on the system.

The chief tonic influences that may be employed in the treatment of nervous diseases are :

1. *Air, and sunlight, and exercise.*

There are many, however, who cannot take active exercise. Such persons may often be benefited by the passive exercises of the *Movement Cure*. (See Movement Cure, Massage; see also Air, Sunlight, and Exercise, under Hygiene.)

2. *Nourishing food.*

Nervous patients were formerly half starved. We now know that they need the best of nourishment. (See Food, under Hygiene.)

3. *General faradization and central galvanization.* (See Electro-Therapeutics.)

This remedy, though not a specific for any one disease, yet is remarkably efficacious in the treatment of nervous disorders. (See General Electrization.)

4. *Movement Cure*.—That active and passive exercise of the muscles operates beneficially on the nervous system, no one will now question. (See Movement Cure, Gymnastics.)

5. *Internal tonics*.—The best internal tonics for nervous diseases are phosphorus, phosphoric acid, pyrophosphate of iron, strychnine, arsenic, quinine. (See remarks on these remedies.)

6. *Water*.—Bathing is oftentimes very useful for nervous patients. Some are greatly benefited by the *Russian* or *Turkish baths*. The *shower-bath* is a very powerful tonic for those few who can bear it and know how to use it. *Salt-water bathing* is for many an agreeable and very efficient tonic. (See Water Cure.)

Several of these remedies and systems of treatment may be tried simultaneously or consecutively.

For details, see the special nervous diseases under their appropriate titles.

When all these measures fail, the patient, if able, and unless the judgment of his medical adviser forbid, may visit the various springs and baths.

The results of the treatment of nervous diseases depend very much on the *perseverance and force of will* of the patient.

Nervous patients should not expect too much. In very many cases they should be content if they are relieved or approximately cured.

Besides all these general principles of tonic treatment, nervous patients will frequently need special treatment of a very different kind.

Most of these special methods of treatment are described under the different nervous diseases.

NETTLE-RASH—HIVES—(*Urticaria*).

Symptoms.—No part of the body is exempt from nettle-rash. It appears in large, flat, elevated patches or wheals, of irregular shape, hard, of a pale red color, but in some instances whiter than the surrounding skin, and is attended with severe itching and tingling. The eruption is sometimes accompanied by a slight degree of fever; in other cases it appears suddenly, without any constitutional disturbance. It generally appears in the morning, vanishes in the course of a few hours, and perhaps reappears twice or thrice in the course of the day. After breaking out repeatedly in this man-

ner, it usually disappears entirely at the expiration of six or eight days, sometimes much sooner. Nettle-rash occurs most frequently in young people and females; it is generally, if not always, connected with disorder of the digestive organs, and in particular constitutions is readily produced by certain articles of food, as lobsters, crabs, mussels, and other kinds of shell-fish, cucumbers, mushrooms, etc.

Treatment—In mild cases little will be required beyond light farinaceous diet and gentle laxatives. When the eruption appears after taking into the stomach certain substances which disagree with it, or to which it is unaccustomed, an emetic of *ipecac* generally effects a cure. Nettle-rash generally yields in the course of two or three days under the use of low diet, mild laxative medicine, and drinking freely of lemonade, or barley-water containing a little nitre

NEURALGIA.

Under the general term neuralgia, which, fifty years ago, was but little known either to the profession or the laity, is now included one of the most frequent and distressing symptoms of the chronic diseases of our time.

Symptoms.—Strictly speaking, all pain, in any disease, is nerve pain; and therefore the term neuralgia might be applied to every phase of disease, acute and chronic, that is attended with unpleasant sensations. This term, however, as ordinarily employed, designates an affection of the nervous system, which is attended with pain in the course of some of the principle sensory nerves.

When, in any disease, the pain follows the course of any particular or prominent nerve-branch, it receives the name neuralgia. The pains of the affection are usually quite sudden in their onset, and are of a lacerating, stabbing, darting, or burning character. They are more or less intermittent, and are not ordinarily accompanied by any constitutional febrile disturbance.

The following division of the neuralgias is used by physicians.

- (a) *Neuralgia of the fifth (trifacial or trigeminal).*
- (b) *Cervico-occipital neuralgia.*
- (c) *Cervico-brachial neuralgia.*
- (d) *Intercostal neuralgia.*
- (e) *Lumbo-abdominal neuralgia.*
- (f) *Crural neuralgia.*
- (g) *Sciatic neuralgia.*

Causes.—Complicated cases occur that arise from a variety of causes. A patient afflicted with anemia or neurasthenia may suffer from neuralgia that may be aggravated by neuritis, or by a wound or bruise. A curable case of neuralgia of malarial origin may be rendered incurable by the supervention of organic disease of the brain or spinal cord. Illustrations of these varied forms are sufficiently familiar to the practitioner. The prognosis of the affection manifestly depends on its causation. It is impossible to give an intelligent opinion in any given case, without first ascertaining the predominant condition on which the symptoms depend. The principles on which neuralgia is to be treated are simply these two: *first, to relieve the pain; and, secondly, to remove the cause.*

Constitutional neuralgias are those which depend on morbid constitutional conditions. Under this head are, therefore, included those which are caused by anemia, by neurasthenia, and by the poisons of malaria, minerals, and the various toxic diseases.

The constitutional conditions that are most frequently the causes of this form of neuralgia are unquestionably anemia and neurasthenia, or what is commonly known as nervous exhaustion, inasmuch as these conditions are themselves very frequently the results of poisoning by the system of mercury, lead, opium, alcohol, malaria, rheumatism, gout, etc.

Neuralgia unquestionably causes a vast amount of suffering. In this country it afflicts nearly every family. Some are martyrs to the disease all their lives, and find from medicine only temporary relief. It is therefore important for every one to know what methods of treatment are used by physicians, as well as those measures that are of a domestic character.

Treatment.—1. To relieve the pain temporarily.

The best method of relieving neuralgic pains is by hypodermic injections of morphine and atropine. (See Hypodermic Injections.) This method of treatment is not, however, well understood by the people, and is not used by all in the profession. Accidents occasionally occur from its use.

Electricity frequently acts like magic in neuralgia. Local galvanization is usually to be preferred. Sometimes, however, galvanization is most successful, and in other cases faradization. (See Electro-Therapeutics.)

Veratria ointment—15 grains (.97 gram) of veratria to 1 ounce (32 grams) lard—rubbed over the painful nerve is sometimes

efficacious. Tincture of aconite applied on the skin is sometimes useful.

Hydrate of chloral, 1 drachm (4 grams),
Powdered camphor, 1 drachm (4 grams),
Sulphate of morphine, 2 grains (.13 grams),
Chloroform, 40 drops (2 grams). Mix.

DOSE.—From 15 to 30 drops.

The following combination of belladonna and gelsemin is valuable :

Tincture of belladonna, 1 ounce (32 grams),
Tincture of gelsemin, 1 ounce (32 grams).

DOSE.—From 10 to 20 drops once in four hours. Always begin with small doses.

In some cases it is well to make a small blister, and then to place on the raw surface a grain of morphine diluted with a little gum arabic. Electricity not only affords temporary relief, but when repeated perseveringly is one of the best curative remedies that we have. There are many, however, who are so situated that they cannot avail themselves of the assistance of a physician who employs electrization. For such it is, of course, necessary to depend on other remedies. In desperate cases physicians sometimes give inhalations of ether or chloroform. For a local or outward application, chloroform liniment, spirits of hartshorn. The hot bath, hot fomentations of hops, and other hot applications, usually afford relief.

2. To break up the attacks. Usually the patients need tonic treatment. (See Nervous Diseases, Treatment of.)

Physicians now use the actual cautery in some cases.

There are some cases of neuralgia that are in their nature incurable. They may depend on some incurable disease of the brain or spinal cord.

NEURASTHENIA, OR NERVOUS EXHAUSTION.

Causes.—The character of this malady, if I be allowed to call it such, may best be understood by comparing and contrasting it with *anemia*, a condition which has been more thoroughly discussed, and is therefore more vividly appreciated, by the profession at large.

Anemia is to the vascular system what *neurasthenia* is to the nervous. The one means want of *blood*; the other, want of *nervous force*.

Both anemia and neurasthenia may be the *effects* of acute or chronic diseases, and both may be either acute or chronic in their course. Thus neurasthenia may be the effect of wasting fevers, exhausting wounds, parturition, protracted confinement, dyspepsia, phthisis, and so forth. Anemia, as is well known, may result from the same diseases.

Both anemia and neurasthenia may also be the *cause* of chronic and acute diseases. Thus neurasthenia, or nervous exhaustion, may give rise to dyspepsia, headaches, paralysis, insomnia, neuralgia, rheumatic gout, spermatorrhea in the male and menstrual irregularities in the female. Anemia also is the source of many of these diseases, though perhaps it is more frequently the effect.

Anemia and neurasthenia may cause each other; anemia is often the result of neurasthenia, and *vice versa*.

Both anemia and neurasthenia are most frequently met with in civilized, intellectual communities. They are a part of the compensation for our progress and refinement.

Anemia and neurasthenia may run into each other, and become so closely interblended that it is oftentimes impossible to determine which was the cause and which was the effect, or which is the ruling condition.

Both of these conditions, whether existing separately or in combination, are best treated by some form of constitutional tonics. In anemia we give those tonics that directly and specially affect the *blood*; in neurasthenia we give those remedies that directly and specially affect the *nervous system*.

Neurasthenia may result from any causes that exhaust the nervous system. Hereditary descent terribly predisposes to neurasthenia, just as it predisposes to all forms of nervous derangement. The law of *reversion* is frequently illustrated here; and sick headache, epilepsy or insanity, or dyspepsia in the grandfather may skip over a generation, and show itself as neurasthenia in the grandchildren. Among the special exciting causes of neurasthenia may be mentioned the pressure of bereavement, business and family cares, parturition and abortion, sexual excesses, the abuse of stimulants and narcotics, and civilized starvation, such as is sometimes observed even among the wealthy order of society, and sudden retirement from business.

Symptoms.—Some of these symptoms are of such a positive character, and so frequent, as well as peculiar, that they give names to diseases, and for convenience sake are spoken of as diseases, although they are but manifestations of the neurasthenia.

A frequent spot of tenderness is found over the eyebrow and

in the left temple. This is found in sick headache, and in connection with it there may be tenderness of the nape of the neck. A sudden jar, as when one slips in going downstairs, may, in these cases of cerebral irritation, cause temporary pain, as though the head itself had been struck. Emotional disturbance of any sort may bring on an attack of this symptom, as also may confinement in heated rooms, or in bad air, or over-mental labor. These symptoms, indeed, are not constant, but come and go according to the exciting causes. Sometimes they last but for an hour or two, or for a day or part of a day. The same is true of all analogous states, spinal tenderness, and general hyperesthesia.

Tenderness of the Spine (Spinal Irritation, Myelasthenia) and of the Whole Body.—When the spine is so tender as to become an important and permanent affliction, and to overshadow other symptoms of the neurasthenic state, it is called spinal irritation; but strictly it is a symptom like cerebral irritation, not properly a disease as such, although, as a matter of convenience, there can be no harm practically in describing it as a disease.

The transient nature of this symptom of spinal and general irritation is shown by the fact that it may disappear often on application of electricity. Many women always have spinal irritation during the period of menstruation.

General or Local Itching.—Itching occurring without any visible change in the appearance of the skin is a common experience; but is not regarded as pathological, unless it be quite severe and persistent. In certain nervous states it becomes an element of positive distress.

Abnormalities of the Secretions.—In nervous exhaustion, the eyes may become moistened more readily than in health, and under a very slight emotion of pleasure or of pain. The flood-gates seem, as it were, to stand ajar, and on trifling agitation the tears flow forth. In grave cerebral disease, this symptom is common enough, but in functional disease—simple nervous exhaustion—it is even more common.

In nervous debility, also, the sebaceous glands may refuse to do their duty; the hair and beard become dry and stiff, and much pomade is needed. The hair then falls off or becomes gray in patches. Dryness of the skin in this state is a symptom familiar to all; likewise is excessive and morbid perspiration in the axilla, or in the hands or feet, or other parts of the body. Clamminess of the hands is, in young men, almost diagnostic of sexual exhaustion.

Tenderness of the Teeth and Gums.—Attacks of tenderness of

all the teeth, accompanied by a whitish appearance of the gums, I have noticed in nervous exhaustion. In these attacks, which may result from over-work or excess, all the teeth may be very tender on pressure, although none of them are decayed.

Vague Pains and Flying Neuralgias.—The so-called “growing pains” in the young are probably of this class; the force in the system is insufficient to maintain growth without suffering a degree of impoverishment which expresses itself by a subdued growl of pain.

Waving, beating, rolling sensations are often felt by the neurasthenic, even when not exactly hysterical. Shooting neuralgic pains in the limbs, or nearly all parts of the body, cause much suffering with this class of patients. Sometimes flying neuralgias are confounded with the neuralgia of incipient locomotor ataxia, which they, in some respects, resemble, but are not as violent, and do not have so much of the boring character.

Flushing and Fidgetiness.—Patients of this class oftentimes easily flush and easily faint; the inhibitory action of the sympathetic is readily interfered with by any slight emotion. Fidgetiness and nervousness, inability to keep still—a sensation that amounts to pain—is sometimes unspeakably distressing.

Frequently the pulse of the nervously exhausted is compressible, and almost always it is more rapid than normal, ranging between 75 and 90, frequently going up to 95 and 100 and more. In exceptional instances, nervous exhaustion has a very slow pulse, in the neighborhood of 40 or less.

Sudden Giving Way of General or Special Functions.—The neurasthenic patient cannot, therefore, trust himself a half hour or even a moment in advance. In the morning, he may be, or feel, able to walk five miles; in the afternoon, from no traceable cause, it may be a task to cross the street. Even in the midst of any labor—mental or muscular—his strength gives out as suddenly as if he were struck by lightning.

Special Idiosyncrasies in Regard to Food, Medicine, and External Irritants.—When the nervous system becomes exhausted, it is apt to develop various idiosyncrasies not before observed; some of them are of high interest. Opium, for example, is likely to aggravate insomnia in many neurasthenic patients, instead of putting them asleep, unless, indeed, very large doses are used. Formerly opium was our chief, almost our only, dependence when we wished to put one asleep. Now we scarcely think of using it for that purpose in the treatment of the nervous, except when there is severe pain to be relieved.

Coffee often acts badly with these cases. The other day a young man, who consulted me for sexual exhaustion with nervous dyspepsia, told me if he drank a single cup of coffee in the morning he was unable to attend to his business with comfort, and could not calculate or write correctly.

Another idiosyncrasy developed by nervous exhaustion is *sensitiveness to cold or hot water*. A patient of mine could never bear to even dip his hands in hot water, so disagreeable were the sensations it produced; the same patient was abnormally ticklish and timid.

Sensitiveness to Changes in the Weather is a very often observed symptom of nervous debility; depression of the nerves makes the body a good barometer. For twenty-four hours and more before a storm comes on, the aching and worn nerves foretell in every part of the physical organism what is coming. The sky may be clear, but the spirits are cloudy. The tenderness of bunions and corns, the aching and stiffness of rheumatic and neuralgic sufferers, the general gloominess and misery of the exhausted before and during bad weather, are not imaginations, but realities as truly as small-pox or the measles, and quite as much worthy of professional study and consideration.

Patients of this class are oftentimes made profoundly worse by the depressing atmosphere of dog days, and generally by the extreme heat of our summers. The latter half of August is especially severe on these cases.

A Feeling of Profound Exhaustion unaccompanied by Positive Pain.—Attacks of a sensation of absolute exhaustion, as though the body had not strength to hold together, comes on very often in the nervously exhausted. This feeling of exhaustion, though not exactly pain in the usual sense of the word, is yet, in many cases, far worse than pain. These attacks may come on suddenly without warning, and may suddenly disappear.

Ticklishness.—Nearly all persons are susceptible to the form of irritation that we call tickling; but in nervous exhaustion this susceptibility may become a severe annoyance.

Desire for Stimulants and Narcotics.—When the nervous system loses, through any cause, much of its nervous force, so that it cannot stand upright with ease and comfort, it leans on the nearest and most convenient artificial support that is capable of temporarily propping up the enfeebled frame. Anything that gives ease, sedation, oblivion, such as chloral, chloroform, opium, or alcohol, may be resorted to at first as an incident, and finally as a habit. Such is the philosophy of many cases of opium or alcohol inebriety.

Insomnia.—The wakefulness of the nervous is a symptom at once common and distressing, and is sometimes rebellious to all our bromides, and even to chloral. Sometimes it is the very first symptom of nervous disturbance, expressive of a mild phase of difficulty, and disappearing as the disease gets worse. In other cases, it is constant and obstinate from first to last. This symptom may yield to electricity when other medication has no power.

Nervous Dyspepsia (Dyspepsie Asthenique).—It is one of the peculiarities of nervous dyspepsia that it abhors a vacuum; is always much worse when the stomach is nearly or quite empty. Patients so afflicted need to take light meals, and to take them frequently—perhaps very many times daily.

Partial Failure of Memory.—Memory is a measure of mind. When rightly studied, it is perhaps the most delicate of all neuro-meters or indicators of the nervous force in health and in disease. With the growth of the brain in childhood, memory grows, and it declines with the slow decay of normal old age. Partial failure or treacherousness of memory is not only a sign, but in some cases one of the very first signs, of exhaustion of the nervous system. Business men find that they cannot depend on their memories as formerly; they forget details of engagements—sometimes those of importance—and thus are variously inconvenienced.

Sexual Exhaustion, or that form of nervous exhaustion that is noticed in young men who over-excite or over-use the genital function, in the natural or unnatural way, is usually, if not always, accompanied by failure of memory; but other forms of nervous exhaustion in both sexes offer the same symptom.

Deficient Mental Control.—Inability to concentrate the intellect on any task, as in writing or thinking, is a notable symptom. The mind wanders away in every direction, and when brought back by an effort of the will is liable to be soon again lost in reverie.

In some cases, the exercise of concentration, or even slight attention, is exceedingly irksome and painful, causing distress sometimes in the head, sometimes in the back or extremities, or other parts of the body.

Seminal Emissions—Partial or Complete Impotence.—Occasional seminal emissions in the healthy and unmarried are physiological—that is, they are not symptoms of disease, but normal and necessary results of abstaining from sexual intercourse. Such involuntary discharges, when excessively frequent, are both results and causes of disease, indicating an abnormal, usually an exhausted, state of the nervous system, and in turn reacting on the nervous

system, increasing the very exhaustion that causes it. Such, in general, is the philosophy of all, or nearly all, cases of frequent involuntary seminal emissions.

An attack of *acute* disease of any kind may leave the system, during convalescence, in a state where seminal discharges may take place with far greater than the normal frequency; on return to health, this symptom, with all other symptoms of debility, disappears.

Chronic neurasthenia is often accompanied, as one of its symptoms, by seminal emissions, even in those who are married; indeed, some of the most persistent cases I have seen have been in married men.

Impotence—partial or absolute—when it appears as an effect of neurasthenia, as it frequently does, usually recovers with the improvement in the nerves, sometimes without special treatment.

Changes in the Expression of the Eyes and Countenance.—In sexual exhaustion, downcastness of the features, aversion of the eyes, and general sheepishness of manner, with dark circles beneath the eyes, are symptoms that have long been observed, but these signs, taken individually, are not pathognomonic of any special form of nervous exhaustion, since they appear in nervous and digestive debility, however caused. It is, however, undeniable that these symptoms, in their entirety, do occur very frequently in the debility associated with sexual disorder, and may, perhaps, be set down as distinctive of that form of nerve disorder. (See Sexual Exhaustion, and Spermatorrhea.)

Mental Depression with General Timidity.—In disease, as in health, fear is one of the symptoms of weakness—an emotion with which the instinct of self-preservation environs every form of incapacity. Patients of this kind will walk up and down before a physician's office many times before venturing to enter. This timidity becomes a serious matter in business, making success very difficult. One of my patients troubled with cerebral exhaustion, of very large wealth and great business experience, tells me that, desiring once to borrow, on perfect security, some money for a certain business purpose, he walked several times up and down the front of the office of the capitalist whose aid he sought, before he could summon the strength to go in.

A very eminent theologian and preacher, who consulted me three or four years ago, told me that when he had charge of a parish, the responsibility of sitting in his pulpit and listening to a travelling agent exhausted him more than preaching himself, for

the reason that he continually feared that the stranger would say or do some indiscreet thing.

Morbid Fear of Special Kinds (Agoraphobia and Astraphobia).—Fear of leaving home, of going out of the house, of going anywhere alone, of crossing a ferry, of crossing an open square, of going through a narrow alley, of going away from the neighborhood of shops or open places of refuge, are some of the phases that this symptom develops. This symptom is not very common, but when it does occur it is very annoying and sometimes quite obstinate. It is a ludicrous and absurd symptom, but it may occur in persons of intelligence and ability and good sense. It is analogous in some respects to the utter helplessness that some experience when standing on an elevation; the will is put to rout completely, and cannot rally at the call of reason. (See Sexual Exhaustion, and Spermatorrhœa.)

The term *astraphobia*, or fear of lightning, I have applied to that form of nervousness that is painfully affected before and during thunder-storms. Headaches, neuralgias of various kinds, depression, spasms, are some of the symptoms of this state, which, in some instances, is hereditary, and runs in families.*

Fear of Society is a phase of morbid fear that is common enough in all forms of nervous exhaustion, but is, perhaps, most often noticed in sexual complications. With fear, blushing of a senseless but overpowering character is often combined; the victims are ashamed to enter the presence of ladies—to enter the presence of any one; they cannot look any one in the face, but in conversation keep their eyes turned down or aside.

Sick Headache and Various Forms of Head Pain.—Sick headache is both a symptom and a safety-valve. If one must be nervous, an occasional attack of sick headache, if it be not too severe, is an excellent way for this nervousness to manifest itself, and, no doubt, saves other and worse affections.

Pain and Heaviness in the back of the head and over the vertex and through the whole head very commonly attend the neurasthenic state—especially when the brain is congested; but may also appear where there is no evidence of an excess of blood on the brain. Lightness of the head is also a common complaint; also a symptom usually defined as “I cannot tell how I feel.”

Disturbances of the Nerves and Organs of Special Sense.—Nervous exhaustion often causes dilatation of the pupils—sometimes dilatation of one pupil and contraction of the other. These

* Beard & Rockwell's *Medical and Surgical Electricity*, 2d ed., p. 456.

conditions are temporary and changing—not permanent—as in certain organic diseases.

Another malady of the eye is what I may call neurasthenic asthenopia, or the irritable eye, from nervous exhaustion, not depending on any muscular or accommodative trouble, but symptomatic purely, revealing nothing to the ophthalmoscope or other tests of modern ophthalmology, but none the less painful, distressing, and, sometimes exceedingly obstinate.

Musæ Volitantes, or floating specks before the eyes, often annoy even the slightly nervously exhausted; in these cases, the ophthalmoscope is only of negative assistance. Under exciting causes, the specks suddenly appear and disappear. The liability to them may be a habit of one's life.

Noises in the Ears in the shape of sudden explosions or pulsations, to say nothing of other varieties of tinnitus aurium, are quite common in cerebral exhaustion, especially when attended with congestion. These explosions may come on without any warning, while one is sitting quite still, and there is no apparent exciting cause.

Localized Peripheral Numbness and Hyperesthesia.—In any portion of the periphery—the face, the arms, the ends of the fingers, the thighs, the legs, and the toes—there may be, in nervously exhausted patients, persistent numbness of a definitely localized character, or excessive sensibility, similarly localized. In some cases, this local peripheral hyperesthesia amounts to a very distressing disease. I was once consulted by a physician who had hyperesthesia of the left hand, caused apparently by local injury acting on a nervous diathesis.

Among other special symptoms coming under this head, I may mention a *crawling or creeping* as of insects just beneath the skin—a sensation as though a pin or many pins were just touched to the skin; a tendency for the legs and arms to “go to sleep,” under far slighter pressure than in the normal state of health, is observed in cases of this class. Sitting a very short time in a hard chair, riding in an omnibus, or car, or carriage, may cause the foot to get asleep, when, in entire health, no such effect would have been produced by the same cause.

I have now under my treatment a man who often wakes up at night with a strong but transient sensation of numbness in the little finger and inner side of the third finger, confined to the track of the ulnar nerve. In other cases, other nerves of the arm may be involved, and all the fingers may be numb. Numbness of this kind usually goes away after a little shaking and rubbing. It is

more likely to come on at night from lying on the arm; but in the daytime, also, it may occur when the arm rests for a few moments over the back of a chair.

General and Local Chills and Flashes of Heat.—Disturbance of circulation both follows and accompanies disturbance of innervation. Creeping chills up and down the spine are commonplace; but there are symptoms allied to this not so familiar.

Local Spasms of Muscles.—What are called “fibrillary contractions,” and which sometimes occur in progressive muscular atrophy, are also noticed in the various shades of nervous exhaustion. An individual muscle or part of a muscle may twitch occasionally or frequently, so as to cause considerable annoyance, and in some cases unnecessary anxiety. As these vibrations occur in the orbicularis, and other muscles of the face, these spasms are very familiar; they come and leave without warning, and suddenly. I was once conversing on nervous diseases with a well-known physician, when, all at once, the orbicularis of one of his eyes began to twitch vigorously; he said it was the first time in his life that he had experienced anything of the kind; he regarded the use of tobacco as the probable cause.

The stomach, in nervous dyspepsia, may be the seat of similar spasms, which may follow any excitement or emotion, as of fear or responsibility. A sensation like that of a reverse aura seems to go downward to the pit of the stomach from the nerve centres, and excites spasm, apparently, of the muscles of the stomach itself.

In regard to the above symptoms it may be remarked:

First.—The above detailed symptoms are not imaginary, but real; not trifling, but serious; although not usually dangerous. In strictness, nothing in disease can be imaginary. If I bring on pain by worrying, by dwelling upon myself, that pain is as real as though it were brought on by an objective influence.

Secondly.—These symptoms of nervous exhaustion are, in a measure, interchangeable—antagonistic to each other—and nervous exhaustion is itself antagonistic to many other diseases—especially of the acute and inflammatory sort. Diseases prevent disease; diseases cure disease; diseases are antidotes to disease. Sufferers from chronic neurasthenia are safer in the midst of epidemics than others are; they are not subject, as are the robust and full-blooded, to violent and fatal fevers; and when attacked, they are more likely to survive.

Likewise alcohol inebriates do not usually suffer from ordinary nervous exhaustion. Excesses of any kind that injure us in one

way may save us from being injured in other ways. Alcohol seems to act as an internal counter-irritation.

The *interchangeableness* of these symptoms is also noteworthy. In nervous exhaustion, nothing is constant except inconstancy. The symptoms chase each other like the shadows of summer clouds across the landscape. The moment one leaves, another and several stand ready to take their place. In a single day, one may go through the whole gamut of all these notes of disease.

Thirdly.—The *periodical and rythmical* character of some of these symptoms is of much interest.

I once had under treatment a young man who had attacks of nervous depression every day about noon; they lasted but for a short time, but were as periodic as chills and fever—and like chills, and like the preceding case, passed through definite stages.

Fourthly.—Nervous exhaustion is compatible with the appearance of perfect health.

For this reason, as well as on account of the slippery, fleeting, and vague return of their symptoms, patients of this class get but trifling sympathy. Sometimes they are fat and hearty, and have a ruddy, vigorous, strength-suggestive bearing; sometimes also they grow fatter as they grow worse. Noticeably the disappearance of symptoms in the stomach, and the appearance in their stead of symptoms in the brain and spinal cord, is followed by increase in weight that deceives the friend, the physician, and even the patient himself. Thus it happens that patients get the least sympathy when they most need it.

Four years since, a prominent politician consulted me for a medley of nervous symptoms induced by sunstroke—a not uncommon cause of neurasthenia. He was an enormous, herculean man, but gave a history that would well have befitted the most delicate and hysterical woman.

Fifthly.—Nervous exhaustion is a modern disease, and pre-eminently an American disease, and in this country is chiefly found in the North and East. This disease must, therefore, be studied here; we cannot, as in so many other diseases, look to Germany for light and information—for in Germany this condition is comparatively unknown, and in France and England is far more rare than with us.

The *diagnosis* of the neurasthenic condition is sometimes entirely clear, and again is quite difficult. The diagnosis is obtained partly by the positive symptoms, and partly by exclusion. If a patient complains of *general malaise, debility of all the functions,*

poor appetite, abiding weakness in the back and spine, fugitive neuralgic pains, hysteria, insomnia, hypochondriasis, disinclination for consecutive mental labor, severe and weakening attacks of sick headache, and other analogous symptoms, and at the same time gives *no evidence of anemia or of any organic disease*, we have reason to suspect that the central nervous system is mainly at fault, and that we are dealing with a typical case of neurasthenia. But neurasthenia may be associated with anemia and with almost every conceivable form of organic disease. In such cases it is sometimes very difficult to ascertain whether it is the cause or the effect. The history of the symptoms will help us to decide this question; which is, however, of little import, for in either case the general treatment will be substantially the same. Some of the above symptoms are found in *organic* disease. To distinguish them is oftentimes the severest test of professional skill.

Chronic neurasthenia—of which form I am chiefly speaking—may result in paraplegia, in general paralysis, in neuralgia, in uterine disturbances, in dyspepsia, in chorea, in hypochondriasis, in hysteria, and in actual insanity; or under proper treatment it may go on to perfect recovery.

Chronic neurasthenia sometimes proves directly fatal, without causing any organic disease; but such a termination is not usual. It is a chronic condition, and patients afflicted with it may last for half a century. We are all of us more or less familiar with such cases. I have a friend who has been afflicted with neurasthenia for more than fifty years, and yet during all this time he has been severely engaged in the complicated duties of a lawyer, a judge, and a man of business. There is not an organ of his body that has not suffered from this prolonged neurasthenia; from the time he was fifteen years old until now there has been no day in which he has been free from pain. Even anemia has supervened, but though the lamp of life has often flickered, yet at the advanced age of eighty it still “holds out to burn.”

Treatment.—The treatment of nervous exhaustion should be in general of a sedative and tonic character; should not be exclusively applied to any one of these special symptoms, but to the whole condition—to the main trunk and not to the separate branches. Electricity in central and general applications with both currents, varied and abundant food, passive exercise, as *massage*, in some cases, absolute rest in bed; in others, mild, active exercise, and the judicious use of such remedies as relate to the nerve-centres, counter-irritation by very small blisters, or the actual cautery, dry cold to the urethra through the cooling catheter, for

the special form known as sexual exhaustion; fats, fish, and phosphates of various kinds—and internally, *cannabis indica* in small doses, combined with the bromides, strychnine, of course with calabar bean, the preparations of zinc and arsenic, gelseminum and bromohydric acid, caffein, malt, and oil—under this system of treatment, adapted with care and study for individual idiosyncrasies, and combined with right hygiene, the majority of cases of neurasthenia can be permanently relieved, if not substantially cured. (See Nervous Diseases, Neuralgia, and Electro-Therapeutics; also Sexual Exhaustion.)

NEURITIS.

Inflammation of a nerve. Congestion or inflammation of a nerve is one of the causes of neuralgia. (See Neuralgia.)

NEUROSIS.

A functional disease of the nervous system, as distinguished from an organic or structural disease. (See Neurasthenia.)

NIPPLES, SORE.

Women when nursing are liable to have sore nipples—a complaint which is very troublesome, and in many cases not easily subdued. This may sometimes be prevented by washing the nipples frequently during a month or two before delivery, with equal parts of the *tincture of myrrh*, and a strong *decoction of oak bark*. When, however, the nipples have become excoriated and chapped, an artificial teat attached to a shield should be employed, and some mild astringent lotion used several times daily.

Treatment.—When the nipple and parts surrounding it become inflamed and sore, it will be necessary to apply warm poultices of bread and milk, or flaxseed meal, to reduce the inflammation, after which a little sweet cream should be used to heal the excoriation. Quinine internally, in doses of 5 grains (.32 grams) twice a day, is excellent treatment.

NUMBNESS—PARALYSIS OF SENSATION.

A feeling of numbness is a very common symptom in nervous disease. It is not always a bad symptom, but may be purely functional.

The feeling of “pins and needles” is very often experienced

by nervous people. Some are unnecessarily frightened by this symptom. In some cases it indicates serious disease of the brain and nervous system; in other cases it is simply a sign of exhaustion of the nerves. (See Palsy, and Neurasthenia.)

ODEMA.

A swelling caused by the effusion of watery fluid into the loose tissue beneath the skin. It may result from the dropsy of the liver or heart disease, or from inflammation or from debility.

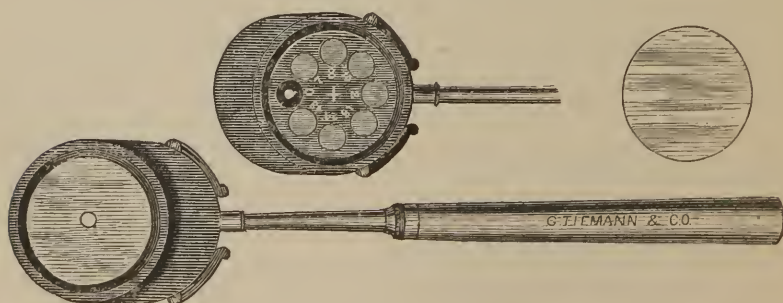
ONYCHIA.

A disease of the nail, connected with inflammation of the bed of the nail. In the simple form, there is pain, redness, and swelling, and a new nail appears. The treatment is by poultices. In the specific or malignant form, the nail must be taken out, and the ulcer treated by nitrate of silver.

OPIIHALMIA.—Inflammation of the conjunctiva or white of the eye. (See Eye, Diseases of.)

OPHTHALMOSCOPE AND OTOSCOPE.

Physicians examine the eye with the ophthalmoscope. With the otoscope they examine the ear. (See Ear Trumpets.) The ophthalmoscope is represented in the accompanying cut.



OPHTHALMOSCOPE.

The use of the ophthalmoscope has wrought a great change in the study of diseases of the eye, just as has the *laryngoscope* in

diseases of the larynx, and the *stethoscope* in diseases of the chest, and the *microscope* in diseases of the urinary organs.

By the aid of the ophthalmoscope the physician can see the retina and the nerve of the eye, and can determine whether they are in a condition of health or disease. Since the discovery of the ophthalmoscope the science of diseases of the eye has made wonderful progress.

The otoscope consists simply of a mirror to reflect the light, and a speculum for the auditory canal. (See Speculum.)

OPIO-MANIA—OPIUM HABIT—MORPHINE HABIT—CHLORAL HABIT.

This condition is analogous to inebriety. It is a result of the habit of taking opium or morphine; and like inebriety it often-times is a disease so severe that the patient cannot cure himself, but needs the aid of friends. As in the case of inebriety, it may be necessary to go to an institution where such cases are specially treated and submit to the rules while taking treatment.

Causes.—Very many persons acquire the habit of taking opium or morphine originally from the necessity of relieving severe pain, and after the pain ceases the habit is so firmly fixed that they cannot break themselves from it. Such is the history of the majority of opium-eaters. Others, however, begin the habit for the sake of the pleasurable sensations that the drug produces.

The quantity of opium that the system can become habituated to is very great. One man took 80 grains of morphine, equivalent to 480 grains of opium, every day by the hypodermic syringe. One of my patients declared that during two years he took as high as 200 grains of morphine a day. I am not sure whether I should credit his statement, but all the facts and history of the case seemed to confirm what he told me. De Quincey never reached any such dose as that.

Treatment.—The principles by which the opium habit should be treated are these:

First. Gradual withdrawal of the narcotic, at first rapidly, then towards the last very slowly—a little every day.

Secondly. The use of *tonics* and *sedatives* of various kinds—as strychnine, electricity, the bromides, iron, quinine, cannabis indica, caffeine, arsenic, hyoscyamus, etc.

This treatment should be carried on under the careful watching of a physician.

Among the evil symptoms that appear during the course of treatment are diarrhea, hallucinations, debility, insomnia, pains in the limbs resembling rheumatism.

The opium diarrhea is to be treated like diarrhea from any other cause.

Caffein is one of the remedies that can be recommended in doses of one, two, and three grains.

As a tonic the physician may use strychnine hypodermically.

The following pills are excellent as aids in breaking up the habit of taking opium :

Extract of hyoseyamus,	21 grains (1.35 grams),	
“ gentian,	21 grains (1.35 grams),	
Powdered camphor	21 grains (1.35 grams),	
Sulphate of quinine,	21 grains (1.35 grams),	
Capsicum powder,	42 grains (2.70 grams),	
Ginger powder,	42 grains (2.70 grams),	
Cinnamon powder,	42 grains (2.70 grams),	
Soap,		} of each enough to make the mass.
Simple syrup,		

Make 100 pills. Take from 6 to 15 a day.

Dr. Crothers, of Hartford, uses the following tonics :

Tincture of nux vomica, 12 drops (.6 gram),
 Dilute phosphoric acid, 20 drops (1 gram),
 Syrup of wild cherry, $\frac{1}{2}$ ounce (16 grams).

Take this amount at a dose twice a day.

I have used the following prescription with very excellent results :

Strychnine, 1 grain (.06 gram),
 Bromohydric acid, 1 ounce (32 grams),
 Cinchonidia, $1\frac{1}{2}$ drachm (6 grams),
 Pyrophosphate of iron, 1 drachm (4 grams),
 Dilute phosphoric acid, $\frac{1}{2}$ drachm (2 grams),
 Syrup of ginger, 3 ounces (96 grams). Mix.

Dose.—One teaspoonful before meals.

Dr. J. B. Mattison uses the following :

Pyrophosphate of iron, $\frac{1}{2}$ drachm (2 grams),
 Strychnine, 2 grains (.13 gram),
 Arsenic, 2 grains (.13 gram),
 Extract of gentian, 1 drachm (4 grams).

Make 60 pills. Take one after each meal.

Plate 0.



JATROPA *Jatropha Manihot*



THORN APPLE *Datura Stramonium*.



CARDAMUM. — *Cardamomum*.



WORMWOOD. — *Artemisia Absinthium*



DEADLY NIGHTSHADE — *Atropa Belladonna*.



COFFEE — *Coffea Arabica*

Or the following :

Muriated tincture of iron, 4 ounces (128 grams),
 Fowler's solution, $\frac{1}{2}$ ounce (16 grams),
 Strychnine, 1 grain (.06 grain),
 Glycerine, $3\frac{1}{2}$ ounces (112 grams).

DOSE.—Take one or two teaspoonfuls after each meal.

For the sleeplessness the following combination is good :

Chloral, 2 drachms (8 grams),
 Bromide of lithia, 1 ounce, (32 grams),
 Fluid extract of hyoscyamus, 1 ounce (32 grams),
 Fluid extract of cannabis indica, $\frac{1}{2}$ ounce (16 grams),
 Honey, 1 ounce (32 grams),
 Water, $\frac{1}{2}$ ounce (16 grams),
 Simple elixir, $\frac{1}{2}$ ounce (16 grams).

DOSE.—One or two teaspoonfuls in a tumbler of water.

The profuse perspiration may be checked by the use of belladonna.

The physician can inject atropine hypodermically.

For the treatment of the diarrhea that annoys opium-eaters, see Diarrhea.

Chloral is occasionally taken habitually, and the use of it may grow into a habit that is hard to overcome. In one of my cases both the morphine habit and the chloral habit were combined. The treatment is substantially the same as for the opium habit.

In all these cases much depends on the force of will in the patient. I have known persons to break off the habit of using tobacco after using it thirty or forty years. I have known others who, after a very few years of addiction, could not conquer the habit.

OTORRHEA.—Discharges from the ear. (See Ear, Diseases of.)

OVARY, Diseases of the. (See Women, Diseases of.)

OXALURIA.—Crystals of *oxalate of lime* are sometimes found in the urine under the microscope; when very abundant, they indicate a morbid state of the system. This condition is sometimes called *oxaluria*. It is really one of the many symptoms of bad nutrition and of nervous exhaustion. (See Neurasthenia.)

PARALYSIS—PALSY—HEMIPLEGIA—PARAPLEGIA.

Symptoms.—Paralysis may be loss of *motion* or of *sensation*, or of both. It is a symptom of many different diseases. It results from *apoplexy*, and is then called *hemiplegia*—from *softening of the brain*, and indeed from a large variety of injuries to the brain. It results from disease of the spine, congestion, inflammation, and degeneration; and then it attacks the lower limbs. Paralysis of the lower limbs is called *paraplegia*.

Of late years much attention has been given to a disease called *locomotor ataxy*, in which the patient, though not actually paralyzed, yet cannot control the movements of his limbs. It is a very grave disease. (See Locomotor Ataxy.)

Paralysis may extend to almost any nerve or branch of a nerve. It attacks the face and draws it one side. It attacks the tongue and throat, and renders speaking difficult or impossible. It attacks the bowels, the bladder, and the heart. It attacks the whole trunk and limbs at once, and then it is called *general paralysis*. This is observed in insane persons. It attacks all ages, but especially the two extremities of life—the *very old* and the *very young*. Paralysis of infants—which is quite frequent—is called *infantile paralysis*.

Causes.—Paralysis sometimes results from exhausting fevers. It may follow diphtheria.

Paralysis results from lead poisoning, from rheumatism; *indeed it may come from almost any cause that injures the system.*

Over-worry, anxiety, excitement, undue ambition, the indulgence of passions—these are the great causes of paralysis. Labor of the brain is healthful; within reasonable limits it is conducive to health and longevity. (See Influence of Occupations on Health and Longevity.) But labor of the brain that is accompanied by excessive anxiety, and that is pursued irregularly, spasmodically, and under unequal pressures, exhausts the nervous system, and may bring on paralysis, or almost any other manifestation of nervous disease.

It was formerly the impression that those who had large heads, heavy and full cheeks, were most liable to apoplexy; but in these times we find that not unfrequently the thin, nervous, delicate, and even the young, are taken down by this disease.

Even children are sometimes paralyzed in one-half of the body.

PARALYSIS OF THE LOWER LIMBS.

This form of paralysis, which is called paraplegia, is also very frequent. It occurs at all periods of life. It may result from some

disease of the spinal cord. (See Spinal Cord, Diseases of.) It may result from diseases of the urinary organs.

There is a difficulty of controlling movements, which closely resembles paralysis, and yet is a really different affection. (See Locomotor Ataxy.)

Paralysis may attack the *eye*, the *ear*, the *larynx*, the *tongue*, the nerves that supply the lungs, stomach, heart, and bladder, and indeed any part or organ of the body.

Syphilis is a very frequent cause of paralysis. When once in the system, it may cause deposits in the membranes of the brain or spinal cord, which excite inflammation and lead to local or general paralysis. Syphilitic forms of paralysis need specific syphilitic treatment. (See Syphilis.)

To specify and describe in detail all the varieties of paralysis that may occur would occupy much space. To mention even the names that are given to them by physicians would be useless.

INFANTILE PARALYSIS.

When paralysis of the arms or legs occurs in children it is called *infantile paralysis*. This disease is of quite frequent occurrence. It should be treated early. Under the combined influence of the various methods of treatment that are used for paralysis, it is oftentimes very much relieved. Sometimes perfect cures result.

Shaking palsy (*Palsy agitans*) is a familiar form of paralysis, that not unfrequently attacks old people. It is usually very obstinate to treatment. In some cases it may be relieved, and in rare cases may be cured by electricity.

The insane are sometimes attacked by *general paralysis*. (See Insanity.)

Paralysis of various kinds may result, by what is called "reflex action," from diseases of the internal organs, as the bowels, or bladder, or womb, or penis, or urethra.

Treatment.—The treatment of paralysis is based on the same general principles as the treatment of nervous diseases in general. (See Nervous Diseases.)

Every case must, of course, be studied by itself. There are many cases that can be perfectly cured. Others can be greatly benefited. There are others still that can receive no benefit whatever.

It is for the physician to decide in which of these three classes—the curable, the relievable, or the incurable—any patient probably belongs.

The remedy which is now used for paralysis more perhaps than

any other single remedy is *electricity*. *Electricity* has been used in the treatment of paralytic affections for more than a century.

All those physicians who give attention to the application of electricity to disease agree that it is useful in paralysis, however widely their opinions may differ on other particulars. (See Electro-Therapeutics, and Localized Electrization.)

Strychnine, phosphorus, are used for paralysis, both internally and by hypodermic (or subcutaneous) injections. (See Hypodermic Injections.) In the early stages of spinal paralysis ergot is of great value.

Passive movements, with massage, are beneficial in paralysis. They may be used in conjunction with other remedies. Patients or the friends of patients, may assist the physician in this way, provided they are so disposed; although it is much better, when it is practicable, to have these movements directed by some one who thoroughly understands his business. Mechanical appliances for assisting the patient in walking and preventing contractions and deformities are of great service, and sometimes indispensable.

Perseverance is extremely essential in the treatment of paralysis, whatever treatment may be adopted. Almost all cases take time and patient care. Oftentimes it takes many months to benefit or cure the patient.

The friends of patients are apt to expect too much from treatment in this affection. They expect that what they call a "shock" of electricity or a few doses of medicine will restore complete motion to limbs that have been paralyzed for months and years. All such expectations are absurd. Paralysis is frequently the result of diseases of the brain or spinal cord, that have been years coming on; it is not rational to expect that these diseases will be cured in a day or in a week. Nature does not work in this way. *The rule is, that diseases which have been a long time coming on must be a long time in recovering.*

Another great mistake of patients is to delay too long before consulting advice. Parents allow their children to be paralyzed for years, and then expect their physician to perform a cure in a week.

The country is filled with cripples, that by proper treatment taken early might have been cured.

Patients give as a reason for their delay that they have no hope of relief. This also is a mistake. Paralysis, if *taken in time*, is frequently as relievable and as curable as other nervous diseases.

In most of the paralyses of the limbs the muscles in time shrink, and the limbs become smaller. The paralyzed limbs may be from

one to a number of inches smaller in circumference than those which are healthy.

One great advantage of treatment by electricity and movements is that it exercises the muscles, keeps them in activity, and thus retards the process of shrinking and waste.

PARASITES. (See Skin Diseases.)

PAROTITIS. (See Mumps.)

PARTURITION. (See Pregnancy.)

PELVIC CELLULITIS. (See Women, Diseases of.)

PEMPHIGUS.

Symptoms.—Pemphigus is a disease of the skin in which blisters containing clear serum appear upon various parts or over the whole surface of the body. These blisters, or blebs, or “bullæ,” as they are termed by physicians, vary in size from a pea to an English walnut. They may occur upon a portion of skin which is apparently sound, and be unattended with redness, or their base may be surrounded with a narrow rim of inflammation. They appear in successive crops of a half dozen or more, and consequently blebs of various size and degree of development are commonly seen upon various portions of the body at the same time. They are at first plump and tense, but after two or three days they begin to wither and flatten from absorption of the fluid contents. Frequently they are broken, and beneath the thin whitish skin of the blister is left a raw spot or a superficial ulceration.

An eruption of blisters such as have been described may occur from the administration of certain drugs, from eating unusual articles of food, from syphilis and leprosy. In such cases the eruption is localized as a rule, and is rarely chronic. In true pemphigus, however, which is a very grave and fortunately a rare affection of the skin, the blebs are constantly recurring, the skin becomes in great part raw or scabbed, the health of the patient is greatly impaired, and in some malignant cases a fatal termination ensues under the most careful treatment. In some cases where the blebs are not fully distended by fluid they coalesce, and large portions of the outer layer of skin are loosened. These dry and form whitish, lightly adherent flakes, giving to the surface of the

skin a characteristic appearance. This form of the disease is called pemphigus foliaceus.

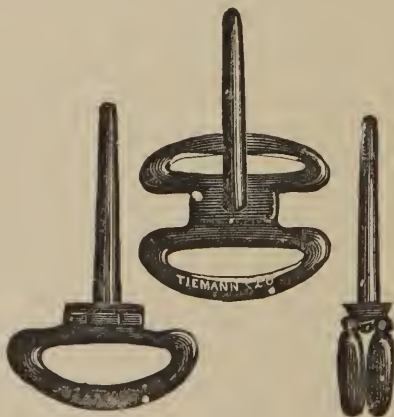
Treatment.—The best internal remedy for this disease is undoubtedly Arsenic—a drug which is too often uselessly employed in many other affections of the skin. From one sixty-fifth ($\frac{1}{65}$) of a grain (one milligram) to one twelfth of a grain (five milligrams) may be given three times a day, thoroughly rubbed up with sugar of milk. Flaxseed meal made into bread may be eaten with advantage by the patient, and the body may be anointed twice daily with flaxseed oil. Only the best Calcutta seed should be used, as it contains a much greater proportion of oil than the seed usually found in the market. It can be obtained from any linseed-oil manufactory.

PERICARDITIS.—Inflammation of the membrane around the heart. (See Heart.)

PERITONITIS. (See Inflammation of the Bowels.)

PESSARIES.

Pessaries are contrivances of various shapes employed to keep the womb in position, when through any cause it has become mis-



CONANT'S PESSARY.

placed. Specimens of these are represented in the accompanying cuts. They should only be used under the direction of a medical adviser.

PHAGEDENA. A severe form of ulcer. (See Ulcer.)

PHLEBOTOMY—BLEEDING.

Cutting a vein, as in the operation of bleeding. Bleeding is not used now as formerly; the modern constitution will not bear it, but without doubt it is yet a wise course to pursue in some cases. It is probable that it is used less than it should be, in certain conditions.

PHLEGMASIA DOLENS—WHITE LEG, OR MILK LEG.

This is a malady of women in child-bed. It is most likely to occur in women who have been weakened by flooding. One or both legs may be affected. The limbs become brawny, but on pressure do not pit as in dropsy, and become in time white, hence the name. There is fever and headache. The swelling usually begins in the foot or ankle and creeps upwards. The acute stage may last three weeks, but the limb may be useless or impaired for a long time, as in a case that I saw a few years ago.

Treatment.—There must be complete rest. Poultices of bran are to be applied to the limb, and hot water fomentations. To relieve pain, opium must be given. The disease is rarely fatal.

PHOTOPHOBIA. Fear of light, on account of the pain caused. (See Eye, Diseases of.)

PHTHISIS PULMONALIS, OR TUBERCULAR CONSUMPTION. (See Pulmonary Consumption.)

PIGEON BREAST.

A malformation in which the bones of the chest project in front so as to resemble the breast of a pigeon. The lungs are thus cramped, and consumption may be caused thereby.

PILES—HEMORRHOIDS.

Piles are small painful tumors situated at the extremity of the great gut called the *rectum*, either within the anus or fundament, or around its margin. In popular language, these swellings, when situated within the gut, are termed *internal piles*; when beyond the verge of the anus, *external piles*; and when there is no discharge of blood they are usually called *blind piles*.

Symptoms.—There are two kinds of piles, differing from each other in structure. The *first kind* is formed by dilatation of the veins of the anus; in those which are external, the veins are covered by thick indurated cellular substance, and the skin surrounding the verge of the anus; the internal are also covered with dense cellular tissue, and by the mucous or lining membrane. In the *second kind* the piles are soft, spongy, and not composed of enlarged veins, but of numerous minute vessels interwoven with each other. When irritated, they increase in size, become hard, and blood is exuded from innumerable points on their surface; whereas in the first kind the hemorrhage takes place from the bursting of the vein, and the blood flows in a stream. Some authors describe other varieties of piles, but they appear to be only modifications of the kinds above described.

Causes.—The causes which induce piles are numerous. The principal of the *predisposing causes* are, a plethoric habit of body, a melancholic, bilious temperament, hereditary disposition, hot and variable climates. Piles are seldom met with before puberty, and women are most frequently affected with them after the *turn of life*. Sedentary occupations and indolent habits, conjoined with full generous diet and the habitual use of wine, malt liquor, spirits, etc., induce a state of general plethora, and more especially fulness of the blood-vessels of the abdomen. In such cases the discharge of blood from piles is merely a salutary effort of nature to relieve the system, and is to be considered as one of the means which nature makes use of to maintain the balance of the various functions of the animal economy, which numerous circumstances, even during the most satisfactory state of health, tend constantly to disturb.

The chief *occasional causes* are: constipation of the bowels, which is by far the most frequent; pregnancy; large or too often repeated doses of purgatives. This disease is also brought on by long sitting, hence it is common among tailors, shoemakers, etc.; by sitting on the damp ground, wearing tight stays, and various causes which tend to obstruct the circulation of blood in the abdomen, and irritate the lower part of the rectum.

Treatment.—Piles at first give very little trouble, and seldom protrude, unless the bowels have been neglected, or the person has been indulging more than usual at table. Under such circumstances they become slightly painful, with a sensation of heat and itching at the anus. These symptoms may be soon relieved by attention to diet and regimen, and regulating the bowels by laxatives. A laxative in common use in such cases is composed of equal parts

Plate P.



VIRGINIA SNAKE ROOT *Asarum canadense* L.



ROSEMARY *Rosmarinus officinalis* L.



PINK ROOT *Sparganium angustifolium* Michx.



MAY APPLE *Podophyllum peltatum* L.



VALERIAN — *Valeriana officinalis* L.



OREGANO — *Origanum onites* L.

of cream of tartar and sulphur, made into an electuary with syrup or molasses; the ordinary dose of this is a large teaspoonful at bedtime. The patient should pass his motions at night just before going to bed. *This is an important part of the treatment, and ought never to be neglected.* The best domestic treatment for piles is the following:

1. Equal parts of *liquor bismuthi* (bismuth-water) and water, applied directly to the anus after evacuations. The same may be injected and retained in the rectum once, twice, and, in bad cases, thrice daily. Two or three teaspoonfuls of the bismuth water in an equal quantity of starch is excellent not only for piles external and internal, but for *prolapsus ani*. Bismuth is a specific for mucous membranes; it is excellent for the inflammations of the nose and stomach; applied to piles it both soothes and constricts.

2. *Witch-hazel* extract may be used in the same way as the bismuth-water, or in connection with it. It is a very popular remedy.

3. For *bleeding* piles use an injection of equal parts of *bismuth-water*, with *fluid extract of ergot*. The injection may be used night and morning, or more frequently.

4. Glycerine internally, in doses of one or two teaspoonfuls three times a day. In this mode of administration, glycerine seems to have some specific influence over piles. It might be given at the same time with the local applications.

In some cases, when the liver is at fault, a short course of cathartic medicine cures piles, by unloading the liver.

I can commend an injection of half a pint of cold water every morning after breakfast.

Powder of oak galls, 1 ounce (32 grams),
Elder ointment, or hog's lard, the same quantity. Mix.

The piles and anus are to be anointed with this night and morning.

Piles frequently become so troublesome that the patient is desirous of getting rid of them at all hazards. There are two methods of removing piles; the one is by *excision* or *galvanic cautery*, and the other by ligature. Recently surgeons have treated piles and radically cured them by injecting a few drops of carbolic acid in olive-oil in the tumor.

PITYRIASIS. (See Dandruff.)

PLAGUE—BLACK DEATH.

A low fever with swelling of the glands, carbuncles and hemorrhage in the skin. This terrible malady has been known as *servants' plague* and *pestilential fever*. It is closely analogous to typhus fever (See Typhus Fever), and is to be treated in the same way. Before the end of the twelfth century, the plague prevailed in many countries of Europe, and made wide devastation.

PLEURISY.

This is an inflammation of the pleura, a painful disease of very frequent occurrence, though rarely fatal when not complicated with other diseases. At its commencement the blood-vessels immediately under the inflamed portion of the pleura become distended with blood, and form a kind of network of a bright red color. The natural secretion from the affected part is at first supposed to be considerably diminished; but an overflow of thin serous liquid soon takes place, and, if the inflammation increase, the fibrinous part of the blood which, in a state of health, nourishes and sustains the pleura, is also thrown out, and forms in solid films or layers upon its surface, or is mingled with the effused liquid which has accumulated in the side of the chest affected. This excessive secretion sometimes continues until the side in which the inflammation is seated becomes completely filled with liquid, and the lung is in consequence so compressed that it ceases to perform its function. The inflammation, however, may attack both sides of the pleura (double pleurisy); but this is comparatively a rare occurrence.

Symptoms.—Pleurisy commences with a slight degree of chilliness, sometimes with severe rigors or shivering. The patient, either at the same time or shortly after, complains of an acute cutting pain (*stitch*) below the nipple, or towards the anterior edge of the arm-pit, which occasionally catches or interrupts the breathing. The ordinary series of feverish symptoms soon follow, viz., hot, dry, and harsh skin, thirst, high-colored urine, and a firm hard pulse. Yet cases frequently occur where it is small, soft, sometimes unequal or intermittent, and closely resembling that which results from great debility; while the patient is at the same time laboring under much oppression and tightness at the chest, accompanied by distressing anxiety. Now, if this oppressed state of the system were mistaken for real debility, and stimulants administered, all the symptoms would be aggravated, and serious consequences might

accrue. But these symptoms, instead of being the result of direct debility, indicate the violence of the inflammation; the acute pain prevents the patient from breathing freely, and the constantly impeded respiration causes obstruction in the lungs; part of the blood, therefore, only reaches the heart, and consequently the quantity in general circulation is greatly diminished. Every time the patient coughs or attempts to draw in a full breath, the pulse becomes suddenly full and hard.

Cough is a symptom which is always present in every inflammatory affection of the lungs; in ordinary cases it is brought on each time the patient endeavors to take a deep inspiration, and when the inflammation is severe, is induced by speaking, or even by moving the chest. In pleurisy the cough is short, dry, and very painful, and the expectoration is scanty, a little whitish, or transparent.

The patient generally lies on the back; but, at the early stage of the disease, sometimes on the sound side. In the chronic form the patient lies on the back, or more frequently on the side affected because the weight of the liquid would impede the motion of the healthy lung if the patient lay upon that side.

In mild cases, or when active treatment has been adopted at the commencement, and only a small quantity of liquid is effused into the chest, recovery takes place in a few days; but when the accumulation of liquid is considerable, the disease may continue from one to three months.

There is a form of pleurisy frequently met with which is at first attended with pain and slight feverish symptoms; but afterwards slight cough, difficulty of breathing, and an uneasy sensation at the chest are the only symptoms experienced by the patient. In some cases no pain is felt at any period of the disease, and the cough, difficulty of breathing, etc., are so slight as scarcely or not at all to be observed. This latent species of the disease comes on sometimes during convalescence from fever, and there is often a considerable accumulation of liquid before any affection of the chest is suspected. Many people who are supposed to die from old age perish from this latent form of pleurisy.

When pleurisy declares itself in the usual way, and active treatment is adopted at the commencement, recovery generally takes place; but when the subjects of the disease are children, or people far advanced in life, it often proves fatal.

Pleurisy usually arises from cold and wet; but it may be brought on by any of the causes which give rise to inflammation of the lungs.

For treatment of pleurisy, see 'Treatment of Lung Fever.

Pleurisy when chronic.—Give jaborandi in doses of 1 drachm (4 grams).

PLEURODYNIA, OR FALSE PLEURISY.

This is a rheumatic affection of the muscles of the side or chest. By those who do not understand the art of auscultation and percussion (see Auscultation, Percussion, and Stethoscope) *false pleurisy* may be, and often is, confounded with real inflammatory pleurisy.

Symptoms.—False pleurisy closely resembles neuralgia of the side of the chest. The difference between them is almost as important as the difference between real croup and false croup. The great difference between them is this, that in true pleurisy there is inflammation of the pleura, with effusion of fluid. This fact the physician ascertains by examination of the chest. In false pleurisy there is no inflammation of the pleura, and consequently no effusion of fluid. The fact of the absence of fluid the physician also ascertains by the examination of the chest.

Treatment.—The treatment of *false pleurisy* is very simple. *Relieve the pain by plasters of belladonna, or opium, or by spongopiline.* (See Spongopiline.) *Neuralgia* of the side of the chest closely resembles false pleurisy; it is to be treated like neuralgia in general. (See Neuralgia.)

PLEXIMETER AND HAMMER.

The pleximeter and hammer are used by physicians in percussion. (See Percussion.) Many physicians prefer their fingers



PLEXIMETER AND HAMMER.

to any form of artificial pleximeter, just as many prefer the direct application of the ear in auscultation to any form of stethoscope. (See Stethoscope.)

Plate 13.



CENTIPED. Page 823.



SCORPION. Page 823.



MAD DOG. Page 696.



BLACK SPIDER (Tarantula). Page 823.



RATTLE-SNAKE. Page 823.

POISONOUS INSECTS AND ANIMALS.

PNEUMONIA. (See Inflammation of the Lungs.)

PNEUMOTHORAX.—In this disease there is air in the cavity of the pleura; the lung collapses and the patient is unable to use the lung or the affected side. It is a serious malady.

POISONOUS WOUNDS.

Treatment.—The treatment of poisons taken internally is described under Surgical Accidents and Emergencies, to which section the reader is referred.

Under the head of *poisonous wounds* I include the wounds made by poisonous *serpents, insects, spiders, fish, mad dogs*.

The course to be pursued when bitten by a poisonous snake is as follows:

1. *To remove the poison from the wound.*—Pass a ligature, a cord or handkerchief *tightly* around the limb, as near to the wound as possible, and *between it and the heart*. Then, if possible, cut the poisoned part entirely out. Then *suck* the wound with the mouth or apply a cup over it. (See Dry Cupping.) Then cauterize it with a stick of lunar caustic (*solid nitrate of silver*), or with a red-hot iron, if the patient will bear it.

2. *To combat the effects of the poison.*—For this there are several methods of treatment. One is to make the patient *completely drunk* with brandy or whiskey. Favorable results are reported from this treatment. Other stimulants, such as hartshorn (ammonia), may be given at the same time. The wound should be bathed in ammonia.

Another method of treatment is by giving large emetics, in sufficient doses to thoroughly vomit the patient.

Another remedy is the following:

Iodide of potassium, 4 grains (.25 gram),
Corrosive sublimate, 2 grains (.12 gram),
Bromine, 4 drachms (16 grams).

Ten drops of this mixture are given in a table-spoonful of wine or brandy. The dose may be repeated if necessary.

In addition to all these other remedies it may be well to try the effect of the electric currents through the chest, and *artificial respiration*. (See Surgical Accidents and Emergencies.)

Poisonous wounds made by insects are to be treated as follows:

Apply hartshorn, or cologne water, or vinegar directly to the

wound. A poultice of *ipecae* has been recommended for the same purpose.

This is all the treatment that is needed for the bites of *wasps* and *bees*. Sometimes a person may be stung by a great many bees or wasps at once. In such cases fainting may be produced, and the patient will need internal stimulants—hartshorn, wine, brandy, or some liquor. Some persons appear to be more susceptible to poisons than others.

Poisonous wounds made by *spiders*, *centipedes*, and *scorpions* are treated in the same way as those made by insects—that is, by the direct application of hartshorn to the wound, and, when necessary, internal stimulants.

Poisonous wounds made by the horns of the so-called “horn-pout” of the Southern waters are best treated by thrusting a sharpened stick of lunar caustic directly into the puncture made by the horn of the fish, and as speedily as possible and as *early as possible*. This treatment always cuts short the inflammation and irritation that the wounds from these fish are apt to produce. While acting as surgeon on the blockade I had many opportunities of testing this treatment on myself and others. The sailors were accustomed to while away the dull hours of the blockade by catching these “*horn-pout*,” and more or less were bitten almost daily. The poison of these fish is, of course, not very powerful, but is sufficient to excite painful and sometimes alarming swelling.

(For treatment of the poison of the common ivy, see *Rhus* in *Materia Medica*.)

POLITZER'S EAR INFLATOR.

This consists of a rubber bag and a rubber tube, with a nozzle. It is used by surgeons to inflate the middle ear through the nose. (See cut of ear, and *Ear, Diseases of*.) By means of the inhaler, which has been connected with this inflator, it is possible to send vapors of iodine and other substances through the nostrils and into the middle ear.

This little contrivance, though very simple, is of very great service in the treatment of diseases of the ear, especially those which result from catarrh (see *Catarrh*), by extension of the inflammation from the throat to the ear.

POLYDIPSIA. Excessive thirst. (See *Diabetes*.)

POLYPUS.

A pear-shaped tumor attached to a mucous membrane by a thin pedicle. They are found in the nose, ear, and womb. They are removed by a surgical operation. (See page .)

POLYURIA. Excessive flow of urine. (See Diabetes.)

PORRIGO. (See Eczema, and Scald Head.)

PRICKLY HEAT. (See Skin, Diseases of.)

PROGRESSIVE LOCOMOTOR ATAXY. (See Locomotor Ataxy.)

PROGRESSIVE MUSCULAR ATROPHY.

A gradual wasting of the muscles, resulting in paralysis. It is quite a new disease.

Symptoms.—Wasting of the muscles of the arm or leg, numbness and tingling, twitching of the muscles, and finally increasing loss of power.

Treatment.—Electricity and strychnine may arrest and relieve, but rarely cure. The symptoms appear to depend on incurable disease of the spinal cord, like locomotor ataxy.

PROLAPSE OF THE WOMB. (See Women, Diseases of.)

PROLAPSUS ANI. Falling of the rectum is a very distressing affection. (For treatment, see Piles.)

PROUD FLESH.

A name applied to the red granulations which often appear on the surface of wounds and ulcers; if they do not rise above the level of the skin, these granulations are of a healthy character, being part of the process by which nature is replacing the lost material and filling up the void which its loss has occasioned; it is manifestly, therefore, unwise to interfere with them; but if they do rise above the level of the skin, they are most likely of a fungous character, and their destruction should be attempted by means of a caustic application—it may be the nitrate of silver itself, or sulphate of copper (bluestone); a few grains of red precipitate, or a little powdered lump-sugar. The first-named of the above is the most effectual, but care should be taken, in apply-

ing it, only to touch the spots themselves. (See Abscesses, Ulcers, Wounds.) *Rubber bandages*, carefully applied, are of late much used for ulcers.

PROSTATE, ENLARGED.

In old men, and even in those over thirty-five or forty years of age, the prostate gland, near the neck of the bladder, sometimes becomes enlarged. Hence arises difficulty in passing water, and retention of urine, so that it is necessary to use a catheter, and use alkaline medicines internally. The best home treatment—if one can have no surgical advice—is the use of *fluid extract of ergot* in doses of half a teaspoonful, three times a day.

Enlarged prostate, by causing retention and decomposition of the urine, sometimes leads to *cystitis*, or inflammation of the bladder. (See Inflammation of the Bladder.)

PRURITUS. (See Skin Diseases.)

PSOAS ABSCESS. (See Abscess.)

PSORIASIS. (See Plate XI.)

Symptoms.—This eruption is characterized by white, scaly patches, circular or oval in form, and rising abruptly from the healthy skin. The patches are usually found near the elbows and knees and on the scalp, and vary greatly in size. There may be spots scarcely larger than pin-heads, and others resembling silver coins of various sizes. Sometimes the whole body is covered with white, scaly, and glistening patches, with irregularly rounded borders. There may be considerable itching, but there is as a rule little if any impairment of the general health. The disease is hereditary, and frequently manifests itself in more than one member of a family. It appears at certain seasons of the year (the winter in most cases), and often disappears of its own accord, only to return again at about the same time in the following year.

Treatment.—This must vary according to the amount of scales present and irritability of the affected skin. The acetate or citrate of potassium, given in doses of from ten to twenty grains in water before meals, is often of service in mild cases, while Fowler's solution of arsenic, in five to ten drop doses taken after meals, is a favorite remedy in the chronic form. An appropriate local treatment is of the highest importance, as it will always suffice to cause the disappearance of the eruption, though it may not prevent a recurrence

of the trouble. Warm bathing with soap frictions is of value in softening and removing the scales from the skin, while various stimulating ointments containing tar or oil of cade are rubbed into the reddened patches underneath. An ointment of chrysophanic acid is a new and admirable remedy.

PTOSIS.—Falling of the upper eyelid from paralysis. (See Paralysis.) This results from disease of the brain usually.

PTYALISM.

Increased flow of saliva—as from excessive use of mercury.

PUERPERAL OR CHILDBED FEVER.

This is the name given to a very dangerous inflammatory disease, to which women are liable shortly after delivery. It assumes two forms; the *first* is purely inflammatory, the *second* is accompanied with typhoid symptoms. In both varieties the inflammation is seated in the peritoneum, or serous membrane, which lines the cavity of the abdomen, and envelops the various organs contained in it. The whole or only a part of this membrane may be affected, and sometimes the substance of the womb and its appendages are inflamed.

Symptoms.—The *first variety* commences with general shivering, or merely a sensation of chilliness in the back and loins. In either case the feeling of cold is soon followed by heat of surface; full hard pulse, sometimes not quicker than natural, but generally varying from a hundred to a hundred and ten beats in the minute; headache, great restlessness, and other symptoms of general excitement, attended by pain and swelling in the whole or part of the abdomen, according to the extent or progress of the disease. The discharge called the *lochia*, or, in popular language, the cleansings, which always follow delivery, is commonly checked, but sometimes continues to flow as usual. The breasts become flaccid, and if the milk have begun to flow, it is dried up, but the disease generally commences before this secretion is established. The patient lies on her back, with the knees raised upwards towards the belly; this position being found the least painful, inasmuch as it slightly relaxes the inflamed peritoneum.

This alarming disease generally makes its attack about the third day after delivery, sometimes on the first, and often not until the sixth day, or even later. It is always the more dangerous the earlier it commences. By energetic treatment it may be subdued in the course of a few days, the pain and swelling subside, the appearance of anxiety and distress so strongly depicted in the countenance gradually wears off, and the woman quickly recovers; or it may be prolonged from eight to fifteen days, and then terminate favorably, or pass into a chronic state, from which the patient very seldom recovers. In many cases the symptoms progress with frightful rapidity, the belly becomes enormously distended, the inflammation extends to the peritoneal covering of the stomach, vomiting supervenes, and the patient dies delirious and in great agony. It occasionally happens, after a longer or shorter period of severe suffering, that the pain subsides, and the patient becomes perfectly quiet and composed. This deceitful calm indicates the near approach of death.

In the *second* or *typhoid variety*, the shivering is severe and long continued; the headache is intense, and accompanied, even from an early period, with constant low delirium, which is in most cases preceded for a short time by drowsiness and listlessness; the latter symptom is shown more particularly by the patient becoming careless about her child. The pulse is small, hard, and exceedingly quick, being from 130 to 160 in a minute; the higher it is the greater is the danger. The skin is hot and dry, whereas in the former variety it is generally moist; the face is pale and contracted, there is great prostration of strength, and frequently vomiting and purging.

Causes.—Childbed fever may be caused by violence during delivery, exposure to cold, premature exertion, agitation of mind, errors in diet, or the imprudent use of stimulants; and it sometimes prevails as an epidemic.

Treatment.—It is supposed that half the women who die in childbed fall victims to puerperal fever; *but the mortality would not be nearly so great if medical aid were procured at an early period of the disease*, for it is only within the first twenty-four hours that much confidence can be placed in remedies. It cannot, therefore, be too strongly impressed upon the minds of the friends and attendants of childbed women that medical counsel should be sought at the very onset of this formidable malady, for, from the moment the first symptoms are manifested, the woman's life is in peril, and this will be increased by every hour's delay.

The violent character of childbed fever, the rapidity of its pro-

gress, and the little control which the physician has over it, show the great importance of adopting measures to prevent its occurrence. Regular exercise ought to be taken during the last months of pregnancy, and the bowels should be carefully kept open by the occasional use of a dessert-spoonful of *lenitive electuary*, or mild doses of fine East India *castor-oil*. If the woman be robust and full-blooded, the abstraction of a moderate quantity of blood from the arm is a necessary precaution, if not forbidden by peculiar circumstances. Two or three hours after delivery the infant should be allowed to take the breast, and this practice should be continued during the first fortnight, even if the mother have no intention of suckling the child herself. She ought to remain in bed during the first nine days, and not quit her apartment for a fortnight.

PUERPERAL MANIA.

The period at which this mental disease appears is various; but it is seldom, if ever, sooner than the third day, often not for a fortnight, and in some cases not for several weeks after delivery. It usually appears rather suddenly, the patient awakening, perhaps, terrified from a slumber; or it seems to be excited by some casual alarm. She is sometimes extremely voluble, talking incessantly, and generally about one object; supposing, for example, that her child is killed or stolen; or, although naturally of a religious disposition, she may utter a succession of oaths with great rapidity. In other cases she is less talkative, but is anxious to rise and go abroad. In some instances the patient recovers in a few hours, in others the mania remains for several weeks, or even some months; but I believe it never becomes permanent, nor does it prove fatal unless dependent on inflammation of the brain.

Treatment.—Puerperal mania is a disorder of the nervous system. The treatment consists in keeping the patient as quiet as possible, in opening the bowels occasionally by mild laxatives, in keeping the head cool by the application of eau de cologne and water, vinegar and water, or any other simple cooling lotion. Mild anodyne remedies are useful in soothing the patient and preventing restlessness during the night. The *bromide of potassium* may be of service. The diet should be light and nutritious. The secretion of milk should be stopped by removing the infant from the mother. But in this disorder, which is seldom dangerous, time and careful nursing are more to be relied upon than medicine.

PULMONARY CONSUMPTION—(*Phthisis*).

Consumption is caused by the deposition of serofulous matter in the substance of the lungs. The deposition takes place in small granules, called tubercles, which are of a dull white or yellowish color, of firm consistence, slightly transparent, varying from the size of a small pin's head to that of a garden pea or a small hazelnut, and disseminated more or less extensively through the lungs; but they are almost invariably more numerous, larger, and more fully developed towards the upper and back part than at the base. The progress of the disease, therefore, is usually from above downwards. In their earliest stage these little bodies are distinct from each other, but as they increase in size and number they coalesce, so as to form thick opaque masses of a yellow color and of considerable size. These small tumors at length soften, and acquire the consistence and appearance of matter (pus); they communicate with each other, and the matter finds its way into the bronchial tubes or air-passages, and passes off by expectoration. Each mass or cluster of tubercles, after reaching a certain size, undergoes the same change, and the cavities necessarily produced by the evacuation of the matter tend to run into each other, in consequence of the gradual development and softening of surrounding portions. The openings formed are at first small, but the softening of tubercles forming the walls of the cavities goes on gradually until a free communication takes place. The excavations thus produced vary in size; sometimes they are not larger than a pea, at other times they might contain half a teacupful, or even a cupful, of fluid; they may be seated deeply in the substance of the lungs, or may approach the surface so as to be bounded only by the pleura, or enveloping serous membrane. The walls of the cavities constantly secrete matter, and portions of them gradually become detached. Sometimes the surrounding substance of the lungs remains sound, but in general it becomes more or less impervious to air; and before the patient dies it is supposed that on an average three fourths of the whole texture of the lungs are rendered incapable of carrying on the function of respiration. In recent times three varieties of consumption are recognized: catarrhal, *fibrous*, and *tubercular*.

Symptoms.—In the *first stage* of consumption the principal symptom is cough, which at first occurs only on rising in the morning, and is little noticed; but after some time it becomes more or less troublesome during the day, particularly after going upstairs or on taking ordinary exercise, but for a considerable length of time is not accompanied by expectoration.

Cough is a *symptom* of some trouble of the air-passages or of the lungs. It is by no means necessarily a bad or dangerous symptom. It may be caused by trouble in the larynx, or even in the pharynx, as well as by bronchitis or consumption, or any other affection of the lungs.

Cough is simply an effort of nature to get rid of some irritation. The cough is not the *disease*, as many suppose; it is nature's method of relieving us somewhat of the irritation of disease. It is bad to cough; it might be worse oftentimes not to cough.

At length the patient begins to expectorate a thin, whitish, semitransparent mucus resembling saliva, and this is observed to be more copious on getting out of bed than during the day. A sensation of constriction now begins to be felt at the chest, and is at times attended with slight difficulty of breathing. After a longer or shorter period the general health commences to give way, a slight degree of shivering is experienced occasionally, and is followed by restlessness and heat of the skin, more especially of the palms of the hands and soles of the feet, terminating in slight perspiration. As the disease gains ground the patient becomes gradually emaciated, and is unfitted for much bodily or mental exertion. His face is sometimes flushed, at other times pale. The pulse is considerably quickened, and the face appears flushed after eating or any bodily exertion. Lassitude soon follows, and the countenance assumes a peculiar expression of languor and fatigue. The patient feels at times chilly, and cannot bear cold as formerly; he is restless during the night, and sometimes awakes with his chest or the calves of his legs bathed in perspiration; and in many cases the hair loses its strength and falls off. At this period the tubercles are interspersed to a greater or less extent through the substance of the lungs, but are still grayish and semitransparent.

The *second stage* commences with softening of the tubercles, and is manifested by a decided change in the appearance of the expectoration, which is now whitish, opaque, and does not run together in masses, but is seen in detached portions, of a round form, with irregular indented edges, and floating in the thin transparent liquid secreted by the lining membrane of the air-passages. During this stage, sometimes at an earlier period, spitting of blood, which is one of the most marked symptoms of the disease, generally takes place. This may be slight, from a few streaks of blood to a spoonful, or it may be to the extent of a pint or more. In some instances the patient is seized with spitting of blood while enjoying apparent health, and this may be the first symptom which he observes. Blood sometimes comes from the mouth or throat, or spitting of blood

may be caused by deranged menstruation, or by local injuries. But it rarely happens that blood comes from the lungs, unless the patient be consumptive. The cough is now greatly aggravated, and is troublesome during the night; the pulse is permanently quicker than natural, and ranges from ninety to one hundred and twenty beats in the minute; hectic fever becomes confirmed; the debility and emaciation increase; the face is pale during the day and flushed in the evening; and pains resembling rheumatism are felt at the shoulders and chest.

In the *third stage* all the symptoms already enumerated increase; the rigors or chills in the evening are severe, the consequent heat of the surface of the body, thirst and restlessness, are very distressing, and the morning perspirations more profuse. The cough occurs more frequently, and is followed by breathlessness; the voice becomes more or less hoarse or indistinct; the slightest exertion increases the difficulty of breathing, and many patients suffer severely from pains in the chest. The expectoration is now very copious, and assumes a yellow color, with a dirty grayish tinge and nauseous smell; it no longer appears in round masses with indented edges, but runs together, still appearing unmixed with the thinner liquid. Frequent purging also harasses the patient, and tends greatly to increase the debility and emaciation; the ankles begin to swell in the evening, and after some time remain permanently swollen. Some patients suffer comparatively little towards the termination of the disease; they waste away gradually until the powers of life are completely exhausted, and death takes place without a struggle. In other cases, again, the hectic fever, difficulty of breathing, and frequent cough, followed by a sense of suffocation and sinking, are severe to the last.

DURATION AND PROGRESS OF THE DISEASE.

The duration of consumption varies greatly in different individuals; sometimes it commences almost insensibly, progresses very slowly, and passes through its different stages almost without either fever or cough; this latent form of the disease is common in children, and in persons far advanced in life. In other cases, again, the tubercles are extensively disseminated through the substance of the lungs, and the disease declares itself abruptly; the fever and prostration are sometimes so intense and the emaciation so rapid that the patient sinks in the course of a few months. This form of the disease is known to the public at large under the denomination of *galloping* consumption, and occurs more frequently in women than in men. It often happens that consumption advances slowly

during a year or two, or even considerably longer; then becomes suddenly developed, and terminates fatally in a very short time. In such instances a slight cough is perhaps the only symptom particularly noticed by the patient or his friends, until he is suddenly seized with shivering, followed by a considerable degree of fever, with oppression and difficulty of breathing; and on examining the chest the physician now discovers that the disorder has advanced beyond the reach of our art. In cases of this description, it is more than probable that tubercles had long existed in the lungs in a latent state, and that the softening process had commenced suddenly in a great many of them at the same time, giving rise to fever and the usual symptoms of the disease in their most intense form.

Sometimes the symptoms of consumption appear to intermit; they cease during summer, and the friends of the patient are led to believe that there is no longer any cause for alarm; the following winter, however, brings back the symptoms, which again disappear almost entirely when the weather becomes mild; these changes, perhaps, take place during several years before the disease becomes fully developed.

The duration of consumption depends greatly on the circumstances of the patient. Those who have it in their power to avoid all the causes which tend to aggravate the disease are, of course, more likely to linger during a longer period than those who have not. The average duration of consumption is from twelve to eighteen months.

The first duty of the *consumptive* is to find out whether he really has the disease or not. This question can only be answered by a competent physician.

Many who are troubled by a cough arising from bronchitis ignorantly suppose that they have consumption, and when the cough leaves they represent to their friends ever afterward that they recovered from consumption.

The true way is to face our danger bravely; to have our lungs examined by a competent and honorable physician in the early stages of the disease, before it is too late to try remedial measures.

If our lungs are not affected, it is a gratification to know the fact; if they are affected, it is important that we should be informed in time. There is, therefore, every reason why we should, as soon as possible, have a reliable opinion concerning the condition of our lungs.

Causes.—Pulmonary consumption is generally admitted to be referable in all cases to one common origin, viz., that de-

bilitated state of the constitution termed the scrofulous habit. This is more particularly remarkable in the hereditary transmission of consumption in scrofulous families, and in the frequent connection which exists between consumption and various symptoms and appearances of scrofula. The development of an external scrofulous abscess bears a strong analogy to the formation and progress of tubercles in the lungs. Both commence in the same slow, insidious manner, become solidified, then soften, and present the same kind of thick curdy matter. We also observe the same general symptoms—the hectic fever, the excessive sweating, the flushing of the face, emaciation, purging, etc., in scrofulous inflammation of the hip- or knee-joint, as in confirmed consumption.

Although the tuberculous or scrofulous constitution, or the state of the system which precedes consumption, can generally be traced to hereditary origin, it may nevertheless arise from various causes, the principal of which are the following:

1. A cold, damp, and variable climate; hence consumption is of rather more frequent occurrence in countries which have wet and cold alternating with heat than in those which have a dry atmosphere, whether cold or hot. This is illustrated by the frequency of the disease in England and in Holland; whereas within the tropics and in the northern part of Russia, where the atmosphere is dry, it is perhaps not quite so frequent.

2. Improper food. Diet composed of substances not sufficiently nutritious or stimulating, or an inadequate supply of food, tends strongly to produce consumption. Hence the disease occurs most frequently amongst the poor, and many consumptive individuals of this class of society attribute their illness to the privations they have undergone from want of food; and among the indigent, particularly in large towns, it is observed that women frequently become consumptive while nursing. On the other hand, among the more affluent classes of society, there is reason to believe that the disease is often induced by abstaining from nutritious food, through false theories on the subject of diet. (See Food)

3. Impure air. Some modern authors place this at the head of the causes of consumption, and there can be no doubt that it exercises a very pernicious influence on the animal economy. Breathing an atmosphere loaded with smoke, and polluted with numerous exhalations necessarily connected with the various processes of animal and social life, must tend greatly to increase the mortality of large towns, more especially among the working classes, who reside in narrow, dirty streets, lanes, confined courts, and similar

localities, where the ventilation is imperfect, and the vivifying rays of the sun are excluded. (See Air, and Sunlight.)

4. Excessive labor. This cause depresses the energies both of the physical and moral system; and whatever tends to debilitate the body tends also to induce consumption.

5. Deficient exercise must also rank among the causes of consumption.

6. Certain occupations. The sedentary occupation of literary men, tailors, shoemakers, weavers, dressmakers, etc., conjoined with want of pure air, induce that state of the constitution of which consumption is to be considered as the local manifestation. This disease also appears to be frequently brought on by certain trades, which expose the workmen to an atmosphere loaded with irritating gases, and minute particles of various substances. (See Influence of Occupations on Health and Longevity.)

TAKING COLD.

There is little doubt that repeated colds do, in one predisposed, lead to consumption; it is therefore the part of wisdom:

First, to avoid taking cold, which is the best thing.

Secondly, to break up our colds, either the first few hours or days after they are caught, which is the next best thing. This can be done in almost all cases by the use of the cold powder. (See Cold Powder.)

Treatment.—Those who are afflicted with pulmonary consumption should remember these facts:

1. *The disease is constitutional, and not simply local.* Therefore all the measures which merely affect the lungs and air-passages can at best afford only temporary relief.

2. *No specific has yet been found for this disease.* Whatever charlatans may advertise, whatever those who profess and who really believe that they have been cured of consumption by some particular nostrum may assert, the people should understand that no specific has yet been found for this terrible disease.

3. *Most of those who declare and who honestly believe that they have been cured of consumption really never had the disease at all, but have simply recovered from bronchitis, or some other less serious affection of the air-passages.* Very few patients can judge whether they have or have not consumption, and physicians themselves are liable to error, especially in recent and doubtful cases.

4. *Consumptives sometimes recover.* When they do not get permanently better their lives are oftentimes much prolonged. It

has been estimated that the lives of consumptives have been quadrupled under the modern methods of treatment.

The first great thing in the treatment of consumption is *Air*. The patient must be as much as possible out of doors. So far as possible, he should live in the open air, and exposed to the sunlight. (See *Air, Sunlight, and Exercise*.)

Next to air comes *nourishing food*. The consumptive needs plenty of *carbonaceous* food. He should therefore be encouraged to eat freely of beef, mutton, eggs, fish, and milk, and to abstain from starch and sugar. If he properly observes the laws of health in regard to air and exercise, his appetite will usually be good, except, of course, in the last stages.

Next to *air* and *food* comes medicine. The medicines which are now found most useful for consumptives are *cod-liver oil*, *cream*, and *alcoholic stimulants*.

It is a mistake for patients to place too much dependence on medicine of any kind, for it is at best merely an aid to nature. Cod-liver oil may be taken in doses of one or two tablespoonfuls two or three times a day. Some patients are unable to take it on account of its nauseous taste. The modern preparations of malt and oil are excellent; also the cod-liver oil emulsion.

There are certain accompanying symptoms that may be relieved or mitigated, even though we cannot cure the disease.

The *night sweats* may be checked by the use of vitrol or aromatic sulphuric acid, with quinine; or by the use of belladonna in small doses.

The *cough* may be checked by opiates, although it cannot be prevented. (See *Bronchitis*, for cough remedies; especially for the *Muriate of Ammonia Mixture*.)

But the patient should be discouraged from taking the thousand and one expectorant medicines that are offered by sympathizing friends. They irritate the stomach and rarely do any good.

Prevention.—Consumption is to be prevented on the same principles by which it is treated. Those who inherit a tendency to this disease, or who suspect that it may attack them, should give attention to the following points:

1. *Air, Exercise, and Sunlight*.—These three are the best antidotes of consumption that we know of. (See *Air, Exercise, and Sunlight*, under *Hygiene*.) Sometimes it may be necessary to change occupation; but I dislike very much to compel patients to leave any occupation that they dearly love, and for which they have a positive taste, for one that they hate, and which is uncongenial to their tastes. I rarely advise one to leave a mental occupation

for one which is purely muscular, unless the indications are very strong indeed.

2. *Abundant food, especially of fats and oils.*—Those who have a tendency to consumption should live as generously as their purses will allow. They should have abundance of flesh. They should take fat meat, if they can make themselves enjoy it.

Consumptives make great mistakes when they refuse meat as a matter of principle, as some do, and confine themselves to vegetables and fruit. (See Diet, under Hygiene.)

3. *Special exercises to expand and develop the lungs.*—It is well to take full long breaths habitually, several times daily, from youth up to manhood. It is well to devote a little time, when we are dressing and undressing especially, to this very pleasant amusement of *slowly inflating the lungs to their utmost capacity, and then as slowly exhaling the air, at the same time standing erect and throwing the arms back.* This practice may be aided by holding small, light dumb-bells in the hands. Dr. H. G. Davis's method of expanding the chest by swinging from a bar may be used with benefit by those whose lungs are in a weak condition. Practice with the spirometer is also of advantage, provided it is guided by common-sense. Practice with dumb-bells is excellent. Resting the hands on two chairs near together, extending the legs on the floor, and slowly lifting the body by the arms from the floor, is a valuable means of expanding the chest.

It is undoubtedly possible to injure one's self by pursuing these methods of developing the chest too exclusively and too severely. That they can be of great benefit to those who use them under the guidance of good common-sense there can be no question.

4. *Residence in a favorable locality.*—It appears from the statistics of Dr. Bowditch, that those who live in houses situated in low marshy places, where the *soil is damp*, are more liable to consumption than those who live in a dry soil. Dr. Bowditch states most emphatically, that in those towns of Massachusetts where the soil is dry, consumption is less frequent and less fatal than in those towns where the soil is moist. The difference in mortality from consumption between the different towns of Massachusetts is most surprising.

The same fact of the dependence of consumption on moisture of soil has also been observed in England. The question of a permanent change of climate must be determined by each individual for himself, and by the advice of his physician.

In preventing consumption, as in preventing nervous diseases, we should not depend on any *one* method of treatment or any one

system, but on all measures that have been proved to be beneficial.

Every necessary precaution should be taken to avoid danger from wet feet, sitting in currents of air, the long-continued influence of cold and wet, and sudden alternations of atmospheric temperature, as going out of hot rooms into the cold night air, or passing from the latter into heated rooms; but exposure to the open air at all seasons, when the body is protected by suitable clothing, and proper precaution is observed, improves the general health and strength, and tends strongly to fortify the system against the impression of cold; whereas confining phthisical persons in warm rooms during winter, and the adopting of other measures for the purpose of escaping the effects of a cold and variable atmosphere, have a tendency to debilitate the constitution, and, instead of counteracting the unfavorable influence of the climate, only render the invalid more subject to it, and thus produce the very opposite effects to those intended. Another powerful means of hardening the body so as to allow the invalid to withstand atmospheric vicissitudes, and render him capable of following his usual avocations and enjoying the rational pleasures of life, is *cold bathing*. At first the tepid shower-bath may be used, or simple ablution of the trunk of the body by means of a sponge or a towel dipped in water, containing a portion of salt or vinegar (two ounces of either to a pint of water), and after the skin has been carefully dried, friction with the hair glove or a rough towel should be used. The time for using this process is immediately on getting out of bed. It is advisable in all cases, whether the shower-bath or sponging be employed, to begin with warm water, reducing the temperature gradually until it can be used quite cold. Either of these methods may be continued daily through the coldest winter, but the latter, being the least troublesome, is generally preferred. Both sexes should wear flannel next the skin, from the collar-bones to the ankles. It ought to be worn of a thinner texture in summer than in winter, *but never altogether discontinued*. Many young ladies bring consumption on themselves by deficiency in clothing, and wearing silk stockings and thin shoes during winter.

Dr. Mattocks thus remarks on the effects of climate on the lungs:

“Dr. Bowditch, in his writings upon consumption, both for the profession and for the people, lays much stress upon dampness as the great exciting cause of consumption.

“While we do not claim that tubercle is deposited by a peculiar fungus, generated by dampness with cold, yet we do claim that where there is a damp cold climate, subject to sudden changes by

reason of lake or marine winds, tubercle follows as surely as mould attacks clothing or damp wood.

“While pathology has not yet taught us conclusively the source or origin of this tuberculous matter, yet experience has taught us the condition of the system most favorable for its attacks. Often a slightly congested lung by reason of cold, followed by imperfect recovery, may be the exciting cause, preceded in the great majority of instances by a lessened vitality, in consequence, perhaps, of a recent attack of illness, grief, or the depressing effect of poverty—all these reasons may predispose to the disease, accompany or hasten it, but a ‘cold’ lights the flame.

“As an illustration of our premises, I give below the census returns of 1860 of the deaths by consumption. The census in many of its details is incorrect, but for the purpose of comparison I find it mainly correct. As the death-rate is very different in many States, for more correctness of comparison I have estimated the number of deaths from the population of each State. For instance, in Massachusetts, for 1860, one person died with consumption in every 250 inhabitants:

“ Maine.....	1 in 280
New Hampshire.....	“ 280
Rhode Island.....	“ 300
Connecticut.....	“ 360
Vermont.....	“ 400
New York.....	“ 470
New Jersey.....	“ 490
Delaware.....	“ 550
Maryland.....	“ 570
Pennsylvania.....	“ 580
Michigan.....	“ 630
Kentucky.....	“ 660
Ohio.....	“ 670
California.....	“ 720
Virginia.....	“ 750
Indiana.....	“ 760
Tennessee.....	“ 770
Louisiana.....	“ 840
Wisconsin.....	“ 850
Illinois.....	“ 880
Missouri.....	“ 900
Iowa.....	“ 902
Kansas.....	“ 910

Minnesota.....	1 in 1,139
North Carolina.....	" 1,300
Arkansas.....	" 1,322
Mississippi.....	" 1,420
Texas.....	" 1,430
Florida.....	" 1,440
Alabama.....	" 1,618
South Carolina.....	" 1,720
Georgia.....	" 2,150

"The '*sine quâ non*' for those who have the moist variety of consumption, and attended with profuse discharge, should be first a dry climate, and leave it to the judgment of the patient which he will choose, or rather which agrees with him the best—hot or cold. For such persons the dry air of Aiken, S. C., or Colorado may be preferable to the moister air of Florida.

"Some patients cannot stand the cold at all; it seems to *wither* them all up. These are, as a general thing, of a phlegmatic temperament, anemic, and bloodless. They have no life, no vitality, and they seem to desire none; they want perpetual sunshine, with little stirring about them. Such, of course, should be sent South, if moved at all; generally there is little to hope from such patients.

"As we prescribe for each case remedies suitable for *individual* cases, so should we prescribe a climate; ever bearing in mind that the same remedy given for the same disease oftentimes affects two persons entirely differently by reason of peculiar idiosyncrasies. This holds true as regards climate perhaps in a more marked degree than in medicine, hence the necessity of a patient and careful examination into *all the circumstances* connected with each case; and by all means let it not be confined to the chest, but let age, sex, temperament, tastes, individual preferences, means, and general condition of health exert their influence on the mind of the physician before venturing an opinion as regards a change of climate."

Concerning the influence of climate on consumption, Aitken thus speaks:

"The science of medicine is not unfrequently indebted to non-professional people for correcting prevailing errors of belief and establishing correct opinions. No one, perhaps, contributed more in this direction, in the discharge of his own professional duties, than the late Sir Alexander Tulloch. It was long a prevalent belief that consumption was limited by latitude, and that it never

appeared in warm countries—for instance, south of the Mediterranean. But this is proved not to be the case; for the returns of the army, prepared by the above writer, have shown that phthisis is more frequent in the West Indies than even in this country—a statement first made by Sir James Clark in his work on climate, in illustration of the injurious effects of that climate on consumptive patients sent there from this country.

“According also to the recorded opinion of this author, great heat appears to have a powerful effect in predisposing to tuberculous diseases (probably by diminishing the exercise in the open air). That it is not the climate of the place which alone produces this result in the West Indies is shown by the fact that officers were attacked in infinitely smaller proportions than private soldiers; and in consonance with the views entertained regarding the nature of tuberculosis, it is more than probable that crowded barrack-rooms, a restriction to salt diet, and drinking spirits may have produced the result.

“It would appear that England and Wales, the Cape of Good Hope, and the Ionian Islands are more exempt from phthisis than many countries which, from their higher temperature, have hitherto been supposed to enjoy a remarkable exemption from this complaint. The result of extended observation now entirely refutes the hypothesis that paludal districts are in an eminent degree exempt from phthisis—an opinion first promulgated by the late Dr. Wells, and advocated by M. Boudin. England and Wales, the Cape of Good Hope, Canada, and Malta—countries either the driest or the best drained, and consequently suffering the least from paludal diseases—are actually those countries the most free from phthisis.”

Concerning the relation of *dampness of the soil* to consumption, Dr. Bowditch speaks as follows:

“1st. Phthisis (consumption) is very unequally distributed in New England.

“2d. There are some places which enjoy a very great exemption from its ravages, if not quite as much exemption as any portion of the globe can claim.

“3d. There are some spots, nay, even particular houses, which are frightfully subject to it.

“4th. There is a cause governing this unequal distribution of the disease,—a law not recognized before these investigations, and still practically ignored by the majority of human beings, which, however, is one of the main causes, if not the sole cause, of the unequal distribution in New England, and possibly elsewhere.

“5th. This cause is intimately connected with, and apparently

dependent on, *moisture of the soil*, on or near which stand the villages or houses in which consumption prevails."

Is consumption contagious?—On the subject of the contagiousness of consumption, the same authority remarks:

"During the last quarter of the last century there was great indecision on the part of the faculty, and many protested against this strong position. From the writings of that period it is evident that the idea of contagion had met a strong opposition, and finally, early in this century, an opinion the exact reverse of contagion was arrived at. Forty years ago scarcely any one believed in it, and Italy relaxed its strict rules. But within a few past years the belief in the contagiousness of tubercle, which is usually synonymous with consumption, has suddenly again sprung up in Germany, under the influence of experiments made by modern physiologists. Inoculations of tuberculous matter from men to animals have been made, and the disease has been reproduced in the animal. It is true that doubt has been thrown upon the real value of the experiments; and we think that doubt is a just one, because it has been found that any long-continued local irritation of an animal—as, for instance, the keeping up of a violently irritating sore on the body—may eventually excite tubercular disease. Moreover, the fact that tubercle inoculated—that is, put under the skin by means of an operation—produces consumption in an animal, is no valid reason for thinking that the emanations from the breath or skin of a tuberculous patient would certainly convey the disease from man to man. Still further, if the disease were really so contagious as some believe, why have not physicians and nurses and attendants at special hospitals for the lungs—as at Brompton, for example—been taken down by the disease?"

"Briefly, we may say that medical opinion is at present much divided upon the topic of the contagiousness or otherwise of consumption. Few, if any, believe it to be equally contagious with small-pox and other kindred contagious diseases. Still medical opinion rather verges now towards the belief that the disease is at times capable of producing a like disease in others, unless precautions are taken by those who have the care of ministering to the consumptive. With these precautions we believe there is no danger; without them there is peril."

PURPURA, OR PURPURIC FEVER.

Symptoms.—Purpura consists of red spots upon the skin, which are not elevated above the surface, and which do not disappear

when pressed upon by the finger. They occur chiefly upon the lower extremities, and result from a rupture of fine blood-vessels and consequent hemorrhage into the skin. On the first day of their appearance—for they always appear suddenly, though often in successive crops—the color is a bright purplish-red or wine color. In a day or two they are of a dull tone, and after lasting a fortnight or more, and becoming yellowish, they disappear entirely. The spots vary in size from a pin-head to the palm of the hand, and most frequently occur upon the legs. The general health may seem unaffected in some cases, although the disease never attacks strong, robust persons. Sometimes the eruption is accompanied by fever and pain in the joints (purpura rheumatica). In a few cases hemorrhage occurs from the gums, stomach, bowels, and bladder, and is known as scurvy. Improper diet on land and lack of vegetable food at sea tend to produce it in these cases.

Treatment.—The treatment varies according to the features of the case. In the simple form iron and quinine may be relied upon to effect a speedy cure. In the hemorrhagic form the patient must remain in bed and have both skilful and unremitting attention. When the hemorrhages are profuse, ergot is the remedy most frequently employed.

PUSTULE, MALIGNANT—CHARBON.

This is “the result of a specific poison, which produces, in the first instance, a redness like the bite of a gnat, and afterwards a minute vesicle. A peculiar form of gangrenous inflammation is excited, which rapidly spreads from the point first affected to the neighboring tissues. Hardening and blackening of this part is extreme, and death of tissue is so entire that the part creaks when cut with a knife. No pain attends the incisions, crops of secondary vesicles form round an erysipelatous-like areola, chains of lymphatics become inflamed, the breath fetid, and death follows amid all the indications of septic poisoning.”—*Budd, quoted by Aitken.*

This disease, though not common in this country, has long prevailed in various parts of Europe. It frequently attacks animals.

The disease may be communicated to man by eating the flesh of animals that were affected with it. On this subject, however, there is a difference of opinion.

It certainly may be communicated by immediate inoculation. Skinners, butchers, and drovers are likely to take it.

It may also be communicated to man by insects that have been in contact with the dead bodies of diseased animals.

There are those who believe that it may be generated spontaneously.

Treatment is useless unless it is commenced early. The remedies are canterization with *potassa fusa* or *nitric acid*, and stimulants internally, with beef-tea and other nourishing food.

The disease is so rare in this country that probably few of my readers will ever see a case. It is stated that the disease has lately appeared in New England in a manufactory where Siberian skins are used.

PUTRID FEVER. (See Typhus Fever.)

PYEMIA—SEPTICEMIA.

This word literally means *pus in the blood*. It is a disease that is well recognized. It is closely allied to *septicemia*, *puerperal fever*, and *erysipelas*. The disease is not fully understood. It usually proves fatal.

It probably results oftentimes from inflammation of the veins (*phlebitis*). Phlebitis may occur in different parts of the body. Very few people would be able to ascertain the existence of *pyemia* during life. Pyemia often follows fractures and surgical operations. The symptoms resemble those of typhoid fever. About seven or ten days after the injury or operation the patient has an attack of shivering. This is followed by fever, headache, and vomiting; the bodily temperature may rise as high as 103° or 104°; then various typhoid symptoms. Death may occur on the third or fourth day, or in a month or six weeks. Recovery is rare.

The antiseptic treatment of wounds, introduced by Lister, of England, does much to prevent pyemia. In this antiseptic treatment the spray of carbolic acid is kept all the time of the operation playing on the part, and on the hands of the operator. The wound is covered with carbolized gauze, and every precaution is taken to prevent the access of air to the wound. In some cases *thymol* is used instead of *carbolic acid*. *The antiseptic treatment is one of the great surgical advances of the age.*

There are no *specific* remedies for pyemia. All that we can do is to sustain the system. We may give tonics and stimulants, and antiseptics, and nourishing food.

PYROSIS. (See Heartburn—Waterbrash.)



CHENOPodium - Chenopodium



CHENOPodium - Chenopodium



CHENOPodium - Chenopodium



CHENOPodium - Chenopodium



GUAIACUM - Guaiacum officinale



GALL

QUARTAN AGUE. (See Ague.)

QUINZY—SORE THROAT—(*Tonsillitis*).

Symptoms.—Quinzy, or inflammation of the throat, is seldom ushered in by shivering, as in other inflammatory diseases; it usually commences with a slight degree of headache, and stiffness of the neck, and a feeling of general uneasiness. At the same time or shortly after, a slight difficulty in swallowing is experienced, together with a sensation of heat and dryness or rawness of the throat, which is soon followed by pain more or less severe, according to the intensity of the inflammation. The patient has a constant inclination to swallow, and every attempt at deglutition greatly increases the pain; the voice becomes nasal, and the articulation imperfect, so as materially to affect the speech; the mucus of the mouth is very tenacious or slimy, and every attempt to spit it out is attended with an aggravation of the pain. Sometimes the patient cannot open his mouth sufficiently to allow the throat to be examined, but if this can be effected, one or both tonsils—generally both, although one is usually more affected than the other—are red and swollen, the uvula or pap of the throat is also enlarged, and hangs down on the base of the tongue. It often happens that the tonsils enlarge until they touch each other; the uvula is then thrown backwards, and almost entirely concealed by them. In many cases the inflammation extends over all the back part of the throat, and is attended by slight deafness, buzzing, and pain. The tonsils are not unfrequently swollen to such an extent that swallowing is entirely prevented, and if the patient attempt to receive any kind of drink it is immediately returned by the nostrils.

If the throat be examined at the commencement of the disease, the tonsils appear like two red balls, dry and shining; but at a later period we may observe in the majority of cases several oval or irregular-shaped spots of a yellowish, sometimes of a greenish color, not only upon the surface of the tonsils, but on all the parts to which the inflammation has extended. We must be careful not to mistake this appearance, which arises simply from thick tenacious mucus deposited upon the inflamed surface, for that which results from a much more dangerous form of the disease—the malignant or putrid sore throat, in which false membranes are thrown out similar to those which we have described as being formed upon the lining membrane of the windpipe in croup.

The feverish symptoms which accompany quinzy are generally more severe than the local disorder would lead us to expect; the

pulse is full and frequent, sometimes as high as 120 in the minute; the face is flushed; there is headache, with a sensation of fulness and weight in the head; there is considerable heat of skin, which sometimes alternates with slight shivering; the tongue appears swollen, and is covered with white or yellowish-colored mucus, and there is a disagreeable taste in the mouth; sometimes there is nausea or vomiting; the bowels are generally constipated; the urine is scanty and high-colored; the patient is restless during the night, and complains of a feeling of fatigue and general oppression.

Causes.—Exposure to vicissitudes of temperature, sitting in a current of air, wet feet, wearing damp linen, going out of a heated room into the cold air, or cold and wet, in whatever manner applied, are the most frequent causes of quinsy. This disorder occurs generally in young people, and is common in all cold and variable climates, more especially in spring and autumn. Women are more particularly subject to it during the period of menstruation. The tendency seems to run in some families. Some who are subject to it in early life in time outgrow it.

Treatment.—1. Take a dose of the cold powder (see Cold Powder) before retiring, at the same time soaking the feet in hot water and mustard.

2. Use gargles of chlorate of potash—twenty or thirty grains to an ounce of water—and take chlorate of potash internally, in doses of ten grains.

3. If this treatment does not break up the attack, apply flaxseed poultices to the sides of the neck.

4. Inhalations of the steam of water or of medicated solutions may afford relief in severe cases. (See Inhalations.)

Muriate of ammonia, 15 grains (.97 grams),
Water, 1 ounce (32 grams).

Use with an atomizer. It may be used both in acute and chronic forms.

Compound tincture of benzoin, 1 drachm (4 grams),
Boiling water, 10 ounces (320 grams).

Inhale the vapor frequently, or inhale the vapor of hot water either with or without.

Use belladonna, in doses of five drops (.25 gram) of the tincture every four hours, until the throat becomes dry.

Chronic enlargement of the tonsils. This is a very common affection. The treatment is—

1. To give iodide of iron or Lugol's solution internally.
2. To apply Lugol's solution and glycerine, equal parts, to the tonsils.
3. To sustain and strengthen the health of the patient by good food, out-door air, etc. Very rarely is it necessary to cut out the tonsils.

In the *relaxed sore throat*, or that state of chronic enlargement of the tonsils and uvula to which many people are subject in the spring and winter seasons, in all countries where the weather is cold and variable, the remedies usually employed are astringent gargles, such as a strong decoction of oak bark, or the following:

Purified alum, 1 drachm (4 grams),
Tincture of myrrh, $\frac{1}{2}$ ounce (16 grams),
Water, 7 ounces (224 grams). Mix.

Ten grains (.65 gram) of *nitrate of silver (lunar caustic)* dissolved in one ounce (32 grams) of water constitute an excellent application for this description of sore throat; it should be applied by means of a camel's-hair pencil. Many people derive benefit from the use of *Cayenne lozenges*; but it often happens that the throat continues in this relaxed state for months, obstinately resisting every kind of local treatment. Under such circumstances, change of air, active exercise, and temperate habits will be found the best remedies.

QUOTIDIAN AGUE. (See Ague.)

RABIES. (See Hydrophobia.)

RECURRENT TUMORS.

Tumors which, after being removed by surgical operation, return. Cancers of all varieties are apt to recur after being removed by an operation.

REMITTENT FEVER—BILIOUS FEVER.

Some indisposition usually precedes an attack of remittent fever for several days. The patient is listless, languid, complains of headache, pains in the back and loins, and oppression at the chest. The appetite is impaired, and the bowels are irregular.

Symptoms.—The attack in general commences with shivering, or a sensation of cold and chilliness, alternating sometimes with flushes of heat. This state is soon succeeded by burning heat and dryness of the skin, flushing of the countenance, and injected eyes, with great increase of the headache, and pains of the back and limbs. The tongue is foul, and the mouth sometimes dry and clammy; there is nausea, and perhaps vomiting, with much thirst. The pulse, which during the cold stage was weak and quick, is now full and strong; the breathing may be hurried, and the patient is extremely restless. The throbbing and pain of the head are occasionally very violent, and may end in delirium; the urine is scanty and high-colored; the bowels are generally, though not always, constipated; and some degree of tenderness is felt on pressing with the hand over the stomach.

After these symptoms have continued from twelve to eighteen hours, partial perspirations appear, followed by an abatement of the febrile symptoms; or they subside without any moisture on the skin. The remission is marked by the pulse being less full and frequent, the skin cooler, and the pains in the head, back, and loins relieved; and by the patient being free from delirium, and the stomach in a less irritable condition. Nine or ten hours elapse before the patient is seized with another paroxysm, which may come on at once without any feeling of cold, or be preceded as at first by chilliness or shivering. The disease goes on in this manner with alternate remissions and returns of fever. If the case end favorably, each succeeding paroxysm becomes milder, until the fever entirely disappears, or it may be carried off by copious perspirations. The periods of remission and increased severity are very irregular, though the abatement of fever very generally takes place in the morning. In cold climates the disease may run on to the fourteenth day, or later; but in hot countries it is much more rapid in its course, terminating sometimes as early as the third day; but the usual period is from five to seven or nine days.

In the more violent and dangerous cases the skin is burning hot and the thirst intense; the vomiting is incessant, scarcely anything being retained on the stomach; there is violent throbbing or shooting pain of the head, attended sometimes with furious delirium; and the pulse is full, quick, and strong. The remissions are short and indistinct, and if the fever proceed to a fatal termination it may become continued. The tongue is furred, red, contracted, and dry, or crusted with black matter; the skin and eyes may have a yellowish tinge; and dark-colored matter may be discharged from the stomach. In some cases before death there are copious per-

spirations, and the patient sinks rapidly; or the hot, pungent, dry skin continues to the last.

Fever of the remittent type has been divided into different varieties from some peculiarity of the symptoms, or from particular organs being affected. Thus for example, when the liver is diseased, or there is much disorder of the biliary organs, it has received the name of *bilious remittent*; when the eyes become yellow, and the skin acquires a dusky yellowish hue; there is vomiting or purging of bilious matter; the tongue is loaded with a yellow fur; and there is often tenderness on pressing with the hand under the ribs, at the right side, in the situation of the liver. The irritability of the stomach in this form is generally very obstinate, and the determination of blood to the head great.

Treatment.—1. *Open the bowels by a dose of Epsom salts.*

2. *Quench thirst with lemonade and effervescing draughts. If the head is hot, apply ice, and bathe the feet in hot water.*

As soon as a remission takes place, which may be known by an abatement of all the symptoms, as already pointed out, the *sulphate of quinine* should be administered; and in hot climates, although the remission be short, and not very well marked, still the opportunity should not be lost of giving this excellent medicine. Two grains may be taken at first in a little water, or wine and water, every hour and a half or two hours; or,

Sulphate of quinine, 1 drachm (4 grams),
Elixir of vitriol (aromatic sulphuric acid) 2 drachms (8 grams),
Water, 1 quart. Mix.

A wine-glassful to be taken every two hours.

If the bowels have not been well evacuated an ounce (32 grams) of Epsom salts should be added to this mixture, but purgative medicine ought always to precede the exhibition of quinine. It ought always to be borne in mind that in administering this medicine the same dose will not answer for each individual; some persons can scarcely bear the smallest quantity, while others require it to be given in large doses to produce any decided effect; hence the safest method of employing it is to commence with a small dose, increasing the quantity gradually until some of its usual effects on the system are felt—as giddiness, ringing in the ears, slight deafness, nervous restlessness, etc.; the medicine ought then to be left off for a time. These head-symptoms from quinine can be prevented by combining *bromohydric acid* with it. The quantity which the system will tolerate can be thus ascertained, and the doses regulated accordingly. The exhibition of quinine must, of course, be suspended

on the recurrence of febrile symptoms, and again resumed during the period of remission. For several days after the fever has entirely disappeared it ought to be continued in gradually diminished doses. If left off too soon a return of fever is a very probable consequence.

In the malignant form, where there is great depression from the beginning, with weak, quick pulse, stimulants must be given early. In hot climates sudden sinking of the vital powers sometimes occurs; the pulse becomes weak and irregular, or is scarcely to be felt; the extremities are cold and clammy, and the body may be covered with cold perspiration; the face is pallid; the eyes sunk in their sockets; and the voice fails. When these symptoms are present no time is to be lost in giving stimulants. Port or Madeira wine, or brandy, in sago, arrowroot, etc., or champagne, which is the best stimulant in such cases, should be given every hour until the pulse begins to rise and the extremities are warm; stimulants are then to be discontinued. The cold perspirations must be constantly wiped off, and the extremities rubbed with warm flannels or rough towels. To rouse the system, mustard poultices or blisters are to be applied over the stomach or to the calves of the legs. If the tongue be charged with a yellowish or brownish-colored fur, and the bowels have not been well cleared out, the following pills should be given every third hour till discharges follow:

Calomel, 4 grains (.25 gram),
Quinine, 2 grains (.13 gram),
Camphor, 2 grains (.13 gram).

Mix, and form into two pills for one dose.

But if the bowels have been well evacuated, a quarter of a grain (.016 gram) of opium may be added to the above prescription, and the dose of calomel reduced to two grains (.133 gram), discontinuing it altogether if the gums become sore. The opium ought also to be omitted if much drowsiness arise; but in these states it usually acts as a stimulant when given in small doses.

In the course of the attack the patient may be put in a warm bath when there is much restlessness and hot, dry skin; or at the commencement, if the extremities be cold, the pulse weak, and reaction have taken place but imperfectly, a hot bath will be of great utility. The patient's drink should consist of barley-water, lemonade, soda-water, tamarind beverage, etc.; and if requested by the patient, cold water may be allowed, a copious draught of which we have known to bring on perspiration when other means had



MEADON. *Daphne genkwa*.



HORTON. *Ligustrum lucidum*.



NATHAN. *Nymphaea odorata*.



CASE. *Carex acutiformis*.



C. WRIGHT. *Myrica Wrightii*.



FORBES. *Lonicera xylosteum*.

failed. Liquids should never be taken in large quantities if irritability of stomach be present, as they will be rejected almost immediately. In the low malignant varieties, effervescing liquors, such as Seltzer or soda water, light beer, etc., will be useful, and are likely to remain on the stomach. The diet ought to be light and nourishing—as arrowroot, sago, panada, etc.; and if the strength be much reduced, beef-tea, soups, custards, etc., should be allowed. Sometimes the vomiting is so intractable that no nourishment will remain on the stomach; in that case the patient's strength may be supported by injections of arrowroot, broths, or other nourishing fluids in small quantities. The apartment ought to be kept perfectly quiet; the evacuations are to be immediately removed, and the room sprinkled with *vinegar* or *chloride of lime* if the effluvia be disagreeable.

In some cases it may be necessary to give arsenic instead of quinine.

The period of convalescence is sometimes very tedious, tonic and strengthening medicines being necessary; but change of air will be found one of the best of remedies; this is particularly beneficial when the fever has ended in the intermittent form (ague), which in many cases will not yield to the usual remedies until the patient resort to change of situation. (For further details of treatment, see Ague.)

RHEUMATISM.

Causes.—The more immediate or exciting cause of rheumatism is cold, especially when it succeeds an opposite state of the atmosphere or is combined with moisture; and the system is more particularly susceptible of the injurious influence of cold when the person is fatigued or in a heated and perspiring state. But although undue exposure to cold in some way or other will be found to have preceded an attack of rheumatism, in by far the greater number of cases it does not appear that this alone is sufficient to give rise to the disease, inasmuch as the instances where individuals are attacked in consequence of exposure to cold are small indeed compared to the numbers who are constantly exposed to atmospheric vicissitudes, and to the influence of cold under all the circumstances in which it would be most likely to prove injurious, without any disease being induced. Hence it may be inferred that cold cannot produce rheumatism unless the system be predisposed to it; but of the real nature of the predisposition we have no positive knowledge.

Rheumatism appears under two forms—the *acute* and the *chronic*.

ACUTE RHEUMATISM, OR RHEUMATIC FEVER,

Is often preceded during several days by general uneasiness, giddiness, ringing in the ears, a feeling of weight and fulness in the head, sometimes headache; there may be also occasional palpitation, hurried breathing on any slight exertion, and symptoms of congestion or fulness of blood in different organs. But these premonitory symptoms are not always observed; it frequently happens that the disease comes on suddenly, in consequence of the body having been exposed to cold and wet. In either case certain general symptoms usually precede the local inflammation. These consist in more or less severe shivering, alternating with flushes of heat, followed by quickness and fulness of the pulse, hot skin, thirst, and a sensation of fatigue in the back and extremities. After several hours, sometimes not before the expiration of a day or two, an aching or gnawing pain is felt in one or more of the larger joints, which goes on increasing until it becomes exceedingly severe, often lancinating as in gout, and greatly aggravated by the slightest movement or pressure. The affected joints become swollen, and the skin covering them acquires a rosy tint, which generally appears in patches. The fever gains ground with the increased severity of the local symptoms; the pulse becomes full and bounding, varying from a hundred to a hundred and twenty beats in a minute; the face is flushed or pale, and bedewed with perspiration; the eyes are red; the skin is hot, and occasionally covered with perspiration which emits an acid, pungent smell: the urine is scanty, and deposits a brick-colored sediment; the tongue is white and furred, but continues moist; there is considerable thirst, and the appetite is lost. When many of the joints are affected at the same time, the patient lies on his back and is incapable of moving, his limbs being completely disabled; the slightest movement of the body is attended with excruciating pain; the suffering is greatly increased during the night, and if sleep overtake him towards morning, he is soon roused by some frightful dream. Sometimes the fever almost entirely subsides in the morning; this, however, is attended with little or no mitigation of the pain; and it is equally remarkable that no relief is afforded by the profuse sweating which frequently occurs during the progress of the disorder. The migratory character of rheumatic inflammation is another singular feature of the disease; it often

shifts its seat from one joint to another, and after some time perhaps returns to the joint originally attacked.

Rheumatism, though a painful and severe disease, is seldom dangerous unless it extend to the heart, and then the risk is greatly increased. Even in this case the immediate danger generally ceases along with the fever; but in many instances disease of the valves of the heart is subsequently induced, and gives rise to enlargement of its substance (hypertrophy), and dilatation of its cavities—lesions which sooner or later terminate in dropsy and death.

The febrile symptoms usually abate about the end of the second week; the local symptoms then gradually diminish until they entirely disappear, or the disease passes into the chronic form. It is claimed that, without regard to any treatment, attacks of acute rheumatism will run a certain course.

Treatment.—Acute rheumatism is now chiefly treated by *alkalies*, *salicylic acid*, and *muriatic tincture of iron*. *Alkalies* are given on the theory that rheumatism is caused by acids in the blood.

The alkalies that are usually given for rheumatism are the *carbonate* or *bicarbonate of potash*, *Rochelle salts*, and *saltpetre*.

These remedies may be given in doses of from twenty to forty grains (1.33 to 2.66 grams), or about half a teaspoonful, in water three or four times a day.

An alkaline prescription is:

Carbonate of potash, 1 scruple (1.25 gram),
Camphor-water, 2 drachms (8 grams).

The above quantity to be taken every three hours.

These alkaline remedies, though by no means certain or infallible, are yet very efficacious for many cases of acute rheumatism.

A certain distinguished physician once made the statement that when "he began practice he had twenty remedies for rheumatism, but in his old age he had not one."

The truth is, that what will cure acute rheumatism in one may only aggravate the disease in another.

If the alkalies do not cure the patient, directly opposite treatment may be used, and *lemon-juice* may be given in doses of a table-spoonful every two or three hours, and large quantities of lemonade may be drank.

Quinine acts well in many cases.

Muriated tincture of iron, in doses of thirty drops (1.5 gram)

every six hours, appears to shorten the duration of the disease in some cases.

The cold powder is a good domestic remedy for rheumatism. (See Cold Powder.) It may be given in somewhat larger doses than for a common cold.

A prominent remedy for acute rheumatism at present is *salicylic acid*, which is usually given in the form of *salicylate of soda*, in doses of from five to twenty grains (.33 to 1.33 gram) in water every four hours.

The following prescription of salicylic acid and borax has been used :

Salicylic acid, $\frac{1}{2}$ ounce (16 grams),
Borax, 1 drachm (\pm grams),
Glycerine, 2 drachms (8 grams).
Peppermint-water, 6 ounces (192 grams).

Dose.—One table-spoonful every six hours.

The following liniment has often proved successful :

Tincture of aconite root, 1 part,
Sulphuric ether, 2 parts,
Tincture of arnica, 2 parts.

Colechicum sometimes assists us when all these other remedies fail. The pain is to be relieved by opium in doses of one or two grains (.06 or .13 gram) as may be needed.

The swollen limbs may be bathed in laudanum and alkaline solutions, and also wrapped in flannel or oiled silk. No powerful applications should be made to the inflamed parts, lest the disease should be driven to the heart.

It is always well to try the alkaline treatment *first*. Especially on account of the tendency of acute rheumatism to go to the heart, patients should in all possible cases place themselves under the care of a physician.

CHRONIC RHEUMATISM.

Symptoms The symptoms, being less severe and of longer duration, are the principal circumstances which distinguish chronic from acute rheumatism. The general character of both these forms of the disease is the same, and the former is in many cases merely the sequel of the latter. In the chronic form the joints are more or less swollen and painful, while symptoms of general excitement are always present in a sufficiently marked degree to indicate the existence of inflammation. The tongue is white and

furred, the skin is hotter and the pulse quicker than natural; the latter, it is true, sometimes appears feeble and easily compressed, but is always in some degree increased in quickness; and if blood be drawn from the arm, it will invariably present the buff-colored appearance on its surface which is observed in all inflammatory diseases. Both the constitutional and local symptoms may continue, varying at times in severity according to circumstances, during a longer or shorter period, perhaps several years; and the disease, if not checked by proper treatment, gradually undermines the patient's health, while it disorganizes the joints, wastes the muscles, and renders him a cripple.

Chronic rheumatism, after continuing a considerable length of time, may ultimately wear itself out; that is to say, the febrile symptoms may cease, and the local disease may no longer carry on its ravages in the joints. The parts which have been inflamed may remain cold, stiff, and contracted; and exposure to cold or atmospheric vicissitudes may render them painful, but rheumatism, properly speaking, no longer exists; the patient now only labors under the morbid changes which the disease has already induced. This state requires little or no medical treatment, and ought therefore to be carefully distinguished from that above described, in which the judicious use of suitable remedies may be of the greatest service.

In the above brief description of rheumatism, we have mentioned that the disease sometimes extends to the heart. This accident occurs most frequently when the disorder has been neglected at the commencement, or when inappropriate remedies have been employed. The symptoms by which we judge that inflammation has invaded this vital organ are, unusually hurried breathing, pain in the region of the heart, perhaps palpitation, and a feeling of oppression at the chest.

Physicians ascertain that rheumatism has gone to the heart by auscultation. (See Auscultation.)

Treatment.—One of the best remedies for the nameless phases of chronic rheumatism that are so common everywhere is *general electrization*. (See Electro-Therapeutics, General Faradization, and Central Galvanization.) There are, however, many severe long-standing cases of chronic rheumatism that nothing will ever cure or even relieve. There are cases which all known methods of treatment, including general electrization, seem only to aggravate.

Such patients are justified, I think, in trying the various "waters" and "baths" and "climates" that their means allow them

to avail themselves of. Anything is preferable to hopeless despair. *It must be confessed that our treatment for the severe obstinate forms of chronic rheumatism is very unsatisfactory.*

The best internal remedies are *salicylic acid*, *iodide of potassium*, *guaiac*, *muriate of ammonia*, and *quinine*. All of them may be tried in succession.

Russian and Turkish baths often afford relief. (See Russian and Turkish Baths.)

Sulphur baths are often very useful.

A *domestic remedy* of great service is a vinegar vapor-bath, which is easily given by elevating the bed-clothes by means of hoops and pouring vinegar over hot bricks in a basin placed under the clothes; the perspiration which follows should be wiped off, the skin quickly sponged with tepid water, then dried with a soft towel.

Sunlight is a good remedy, and *sunlight baths* are to be recommended.

But all of these remedies too often fail us.

LUMBAGO—CRICK IN THE BACK—(*myalgia*).

Lumbago is simply another name for rheumatism in the back. It may be much relieved by *dry cupping* (see Dry Cupping), and by the application of *spongio-piline* (see Spongio-piline), or by the use of *oiled silk* or *rubber cloth*.

The physician can inject $\frac{1}{100}$ or $\frac{1}{50}$ of a grain (.0006 or .0012 gram) of atropine beneath the skin near the affected part.

The thousand and one liniments that are used for rheumatism do little harm, and sometimes may afford relief. In obstinate cases they may be tried to an indefinite extent.

Plasters of *belladonna* or *opium*, and the common plasters of the shops, sometimes relieve pain, even though they do nothing towards removing the disease.

Electricity also acts well in lumbago and myalgia.

SCIATICA.

Sciatica is either rheumatism or neuralgia in the sciatic nerve of the leg. It is caused oftentimes by inflammation within the sheath of the nerve. It is most usually classed among the neuralgias. It is sometimes a terribly painful affection, and in exceptional cases appears to be incurable. The majority of attacks are dissipated after a short time, but are apt to recur. Sciatica is best

treated by *hypodermic injections of morphine and atropine*. (For details of treatment, see Neuralgia.)

The local use of galvanism cures many cases.

RHEUMATIC GOUT.

This is apparently a combination of *gout* and *rheumatism*.

It appears, however, to be a distinct disease from either gout or rheumatism.

Symptoms.—The joints become swollen, and oftentimes painful. The disease is very apt to attack the fingers and toes. Sometimes the patient becomes terribly crippled, and may indeed be bedridden. The affected joints are usually but little used. The disease is frequently confounded with chronic rheumatism, which it so closely resembles. In the chronic form there is very little if any fever. The patient is usually more or less debilitated. The disease seems to be caused by anything that exhausts or weakens the constitution. Females are attacked by it oftener than males.

Treatment.—The treatment of rheumatic gout consists—

1. In *tonics* of various kinds, such as *cod-liver oil*, *strychnine quinine*, *general faradization*, and so forth.

2. *Lithia* internally, in doses of from three to five grains (.19 to .32 gram); it is sometimes given in "*carbonated water*;" and *iodide of lithia ointment*, applied to the affected joints. *Phosphorus* internally, in doses of $\frac{1}{100}$ or $\frac{1}{20}$ of a grain (.0006 or .0012 gram) in pill form, has been recommended.

The rest of the treatment is the same as for chronic rheumatism.

RICKETS.

Rickets occurs generally in children between the ninth month and the fourth year of their age, and is essentially characterized by softening of the bones.

Symptoms.—At the commencement of the disease the child is observed to be less cheerful than usual, languid, and disinclined to be amused; the appetite is impaired, or capricious; and the bowels are irregular. These symptoms are either accompanied from the commencement, or soon followed, by a slight degree of febrile excitement and disturbed sleep. The process of teething goes on slowly and with difficulty, and the teeth soon decay and fall out. The bones of the skull, instead of gradually closing and becoming united, separate from each other, and the head increases

in size; the belly is also enlarged; while the limbs, more especially the thighs and legs, appear thin and wasted. After a longer or shorter period the symptoms which more particularly characterize the disease are manifested. The ends of the long bones at the wrists and ankles, and the extremities of the ribs where they join the breast-bone, become swollen and knotted; the spine is curved in the form of the italic letter *S*; the right shoulder rises, the breast-bone is thrust forwards, and appears somewhat like that of a bird. If the child has begun to walk, he is now unwilling to be left on his feet, and cannot cross the room without difficulty; the knees approach each other, the feet are turned outwards, the limbs are unsteady and seem to yield under the weight of the body. As the disease advances the digestive organs suffer, and the urine deposits a white sediment; the bones now begin to lose the phosphate of lime which gives them firmness, and are softened in such a manner that they bend in all directions, and the little patient is soon reduced to a shocking state of deformity, which renders him a singular, though distressing, object of observation.

Rickets does not generally prove fatal unless the disease declare itself shortly after birth, and then it almost invariably destroys life. When it appears at a later period, and proper attention is paid to the patient, the general health improves, and recovery frequently takes place, but not without leaving a raised shoulder, a hump-back, or some other deformity. In females, the bones of the pelvis often remain distorted, and this, in the event of pregnancy, necessarily leads to consequences of a more or less dangerous nature. If the disease do not give way before the patient reach his fifth or sixth year, he is doomed to be a miserable object during life, which is seldom prolonged to middle age.

Causes.—In the higher classes of life this disease is comparatively rare, and when it does appear, can generally be traced to hereditary transmission; but among the children of the working classes it is far from being uncommon, and appears to originate from the same debilitating causes which give rise to scrofula. Mothers of weak constitution and relaxed habit of body, who live on poor diet, and neglect or have it not in their power to take sufficient exercise in the open air, or are exposed to the long-continued influence of any of the various debilitating causes which impair the vital energies, cannot be expected to bring forth robust and healthy infants; neither is it possible that they can nurse them properly after they have given them birth.

Treatment.—Children who have every attention paid to them are sometimes attacked by rickets, but in the great majority of



J. Massena

FAVUS
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cases much may be done to prevent the disease coming on. If the child be delicate from its birth; if any individuals of the same family be rickety; if the parents be scrofulous; or if there be any other circumstances which might lead us to dread the occurrence of the disease, it will be advisable to procure a strong healthy nurse for the infant, in whom confidence can be placed, and her diet should be carefully attended to as long as the child continues at the breast, in order that her milk may be plentiful and nutritious. Chicken or mutton broth, beef-tea, etc., may be allowed at an earlier period than would be proper for robust healthy children. The child should be washed daily, and the limbs frequently rubbed with a warm hand; and, when the weather permits, he should be carried out into the open air as much as possible, and kept clean and dry.

SUMMING UP OF THE TREATMENT.

1. *Air and sunlight.* (See Hygiene.)

2. *Nourishing food.*—Beef-tea, beef, mutton, eggs, fish. These should be taken freely, according to the age of the patient and the appetite. Nothing brings on rickets like starvation.

3. *Tonic medicines.*—One of the best remedies for rickets is *cod-liver oil* with *malt*, or the cod-liver oil emulsion, or the syrup of the *hypophosphites of lime and soda*.

The elixirs of iron, strychnine, and quinine may also be given.

RINGWORM—FAVUS—(*Tinea capitis*). (See Plate XIII.)

Ringworm is a growth upon the skin rather than a disease of the skin itself. The spores or germs of a minute vegetable organism (the trichophyton) effect a lodgment upon the skin and take root, so to speak. The spreading branches of this rapidly increasing fungus work their way between the cells of the outer layer of skin (epidermis) and dip down into the roots of the hairs. From the spot where the growth begins it spreads in every direction, forming a circular, reddened, and scaly patch which gradually increases in size. Frequently the growth dies where it first began, and only flourishes at the extending margin of the patch. This produces the ring which gives the affection its name. A number of rings or circular spots often coalesce as they enlarge, forming an irregular patch with scalloped borders. The eruption is attended by a slight amount of itching, but has no effect upon the health, although the skin of delicate and strumous children seems to be a more favorable soil for the development of the parasite.

Ringworm may attack any portion of the body, but it is only when it occurs upon hairy parts that it becomes annoying and obstinate. It frequently attacks the head of children, forming one of the varieties of scald head, but is not met with on the scalp of adults. Men frequently have it in the bearded portion of the face, where it constitutes one form of barber's itch.

Ringworm is highly contagious, and the victim of it should avoid too intimate an association with other members of the family and be subjected to an immediate and thorough treatment. It is a disease which may attack the lower animals, and not infrequently it is contracted from horses by men employed in the stable. Children at school often transmit the disease from one to another by an exchange of caps, and when the disease escapes recognition at the outset it may run through a large school or asylum and affect the majority of the inmates.

When ringworm attacks the scalp it is, as has been intimated, a far more serious affection than simple ringworm of the body. From the presence of the hair the disease not only assumes a different appearance, but demands an entirely different plan of treatment. A patch of ringworm on the scalp often passes unnoticed until it has attained the size of a half dollar, and there may be already a dozen or more points over the scalp where the disease has more recently effected a lodgment. An examination of the larger and spreading patch shows that the scalp is slightly elevated and covered with white powdery scales. The hairs growing from this circular patch have lost their natural gloss—feel dry and brittle—or perhaps they have all broken off very near to the scalp and left the patch covered with a growth of short hair or stubble.

If one of these short hairs be extracted and examined under the microscope, the minute round spores or germs of the parasite may be found both around and in the substance of the hair. A patch of ringworm on the scalp occasionally assumes a dark purplish-red and lumpy appearance. A yellowish gummy serum exudes from numerous hair follicles, and the part becomes hairless. The irritation of a patch of ringworm of the scalp frequently produces a moist eruption of salt rheum or eczema, which is another scalp disease which has been confounded with ringworm under the name of scald head.

FAVUS.

There is still another parasitic disease called Favus, which, though produced by a different parasite (the *achorion*), may for all practical purposes be described here as a species of ringworm.

It thrives especially upon the heads of children, although it may be found on various portions of the body. Mice are particularly subject to this eruption or fungous growth, and the pet cat of the household often contracts the disease and transmits it to the children. It looks very much like ordinary ringworm at an early stage of its development, but shortly peculiar small, yellowish, cup-shaped crusts appear upon the scaly surface—particularly around the hairs—and grow into large, thick, dry, mortar-like crusts.

Treatment.—This depends upon a recognition of the nature of the disease as described above. When the parasite is destroyed the disease is cured, and the part affected soon resumes its normal condition. Now a great many remedies have been recommended in the treatment of ringworm, and they will all kill the parasite if they can only be brought in contact with it. This is easily accomplished when the disease is merely on the skin, but it is very difficult to bring about when the fungous growth has reached the roots of the hairs. When patches of ringworm appear on non-hairy parts, it is only necessary to paint them a few times with tincture of iodine or a twenty per cent solution of carbolic acid, or merely to scrub them with soap, in order to effect their removal. Internal remedies are never called for in such a case, and a few days will suffice to complete the cure. When ringworm attacks the scalp or beard, on the other hand, the most energetic measures must be employed; and when the disease has existed for any length of time, a cure is often a question of patient and skilful treatment kept up for months. The hair upon and around the affected patch must be shaven, or when there is considerable inflammation present it may be cut closely with fine scissors. To prevent the spread of the disease the scalp must be daily shampooed, and rubbed with lotion of hyposulphite of sodium (five to ten per cent), while the hair is kept well oiled. To recent patches small blisters may be applied—sulphur ointment rubbed in, or a lotion of bichloride of mercury used with great caution. But in older patches such treatment is too often useless, and only causes a waste of time. The parasite here is at the roots of the hairs, and the simplest method of getting rid of it is to pull the hairs with forceps made for the purpose and then rub in the ointment or lotion. This pulling of the hairs is not particularly pleasant. Children cry at it rather than for it; but in many cases it must be done, and, with a certain amount of instruction from the physician and practice, the mother or nurse can succeed in epilating (pulling out), little by little, a large patch. Of course the hair will all grow in again as it was before, while if

the disease be allowed to persist it may destroy the hair roots in time and permanent baldness ensue.

Favus of the scalp demands the same treatment as ringworm, viz., epilation.

ROSACEA.

Causes.—This is a skin disease which occurs upon the face, and bears a strong resemblance to ordinary acne. (See page 468.) Indeed it is often dependent upon the same causes as the latter disease, and has been described by many writers under the name of acne-rosacea.

It does not depend, however, upon any inflammatory condition of the glands of the face, as does acne, but is the result of a chronic congestion and thickening of the skin with dilatation of the small superficial blood-vessels, especially upon the sides of the nose.

Symptoms.—Rosacea is always confined to the face, and occurs usually between the ages of thirty and fifty. It is characterized by a deep redness of the part affected (often the nose), and the formation of lumps which tend toward suppuration. It is usually aggravated by dyspepsia, and often caused by the too frequent use of alcoholic beverages. The “rum blossoms” of the drunkard are nothing more nor less than rosacea. Similar “blossoms” or “rosy drops,” however, occur upon the faces of those who suffer from dyspepsia, but who have never indulged in liquors. In such cases the term “rum blossoms” might be exchanged for “dyspepsia blossoms.”

Treatment.—The treatment consists in first removing the cause of the trouble, viz., the dyspepsia, or uterine derangement, or whatever abnormal condition may exist. Then local measures will effect a speedy improvement if not a permanent cure. The pustules should be lanced, and until the inflammation subsides the following wash may be freely applied to the face :

Borax, 1 drachm (4 grams),
Glycerine, 2 drachms (8 grams),
Rose-water, 4 ounces (128 grams).

When stimulation of the skin is called for, a mixture of equal parts of the oxide of zinc and ammoniated mercury ointments may be applied. (See Plate XVI.)

ROSEOLA, ROSE-RASH. (See Skin, Diseases of.)

ROSE-COLD. (See Hay Fever.)

RUBBING. (See Movement Cure.)

RUPIA. (Plate XV.)

Symptoms.—Rupia is an affection of the skin in which the contents of one or more angry-looking pustules dries into hard blackish scabs of a conical or flattened oyster-shell form. In the vast majority of cases it is the result of syphilis. The crust may occur upon any portion of the body, and when removed from the skin, deep ragged-looking ulcers are found beneath.

The treatment consists mainly in removing their cause. (See Syphilis, page 932.)

Treatment.—The crusts may be removed by a poultice, and the ulcer should be covered with oxide of zinc ointment spread upon a soft cloth, or with charpie soaked in the black wash.

SALT RHEUM. (See Tetter.)

RUPTURE. (See page 427.)

ST. VITUS'S DANCE, OR CHOREA.

There is no better description of St. Vitus's dance than that given by Sydenham, a hundred and fifty years ago. This disease, he says, is "a species of convulsion, which for the most part attacks boys or girls, from the tenth year to puberty. First it shows itself by a lameness, or rather instability, of one of the legs, which the patient drags after him like a fool. Afterwards it appears in the hand of the same side, which he that is affected with the disease can by no means keep in the same posture for one moment; if it be brought to the breast or any other part, it will be distorted to another position or place by a convulsion, let the patient do what he can. If a cup of drink be put into his hand he represents a thousand gestures, like jugglers, before he brings it to his mouth; for whereas he cannot carry it to his mouth in a right line, his hand being drawn hither and thither by the convulsion, he turns it often about for some time, till at length, happily reaching his lips, he flings it suddenly into his mouth, and drinks it greedily, as if designing only to make sport."

It must not, however, be supposed that the above will apply to all the forms under which this morbid affection is manifested. In many cases the involuntary motions are confined to one side of the body; sometimes the face, or only one of the limbs, is affected; the

muscles of the windpipe and tongue are occasionally attacked, and then the patient cannot articulate properly. In some instances deglutition is performed with difficulty. The disease assumes a variety of appearances, according to the severity of the muscular disorder and the number of parts affected. It is very liable to relapse, and has been known to recur several times in the same person. It is not dangerous, and in young persons generally terminates favorably. It may continue only a few weeks, or as many months; in some cases it has been known to continue through life, without having materially injured the general health.

St. Vitus's dance is essentially a *nervous disease*.

Treatment.—There is no specific for *chorea*. All sedative and tonic remedies are of value, and may be used.

Valerianate of zinc has been used successfully for *chorea*. So also has *sulphate of zinc*, in doses of one grain (.06 grams) three times a day. *Bromide of potassium*, cod-liver oil, pyrophosphate of iron, strychnine, etc., all succeed and all fail. There is no uniformity in the results.

The following prescription cured a very bad and long-standing case in the family of a friend of mine:

Bromide of zinc, 1 scruple (1.25 grams),
Valerianate of zinc, 1 scruple (1.25 grams).

Mix, and make twenty pills. Take one pill three times a day, and increase to two pills.

Strychnine is used in gradually increasing doses until the poisonous effects are produced; but only physicians should use this remedy.

The zinc combination I have found to act well in these cases.

Fowler's solution is applied by some physicians hypodermically. In gradually increasing doses it is given by the mouth, and with good effect.

Sulphate of zinc combined with sulphate of iron has been proven to be of value.

Bromide of iron, in doses of from five to twenty grains (.32 to 1.29 gram) three times daily, has cured many cases of *chorea*.

It may be given in water or in syrup. It acts as a sedative to the nervous system.

Conium has also been highly recommended; but it is an uncertain and more or less untrustworthy drug. Salicylate of soda has cured cases.

It should be remembered that many cases recover by time with-

out any medical treatment. On the other hand, there are obstinate cases that will yield to no treatment or combination of treatment.

Partial chorea, limited to one arm, or to the muscles around the eye, nose, or corners of the mouth, I have found more obstinate usually than general chorea of the whole body. (See Spasm, and Facial Spasm.)

Parents should remember that it may attack a child through *sympathy*. Sometimes it may attack quite a number in succession in the same school.

St. Vitus's dance is sometimes complicated with some disease of the heart. This fact, when suspected, can be ascertained only by the ear of the physician.

There is no necessity for purging in this disease, but care should be taken to keep the bowels gently open, with mild laxative medicines. The cold bath ought never to be neglected. The above treatment will be greatly aided by attention to diet and regimen; the food should be light and nourishing, and exercise should be taken in fresh and open air. Sea-bathing is of great service.

Sometimes the best treatment is to keep the child quiet in a dark room for a week or two, without giving any medicine.

It is a singular and interesting fact in the history of chorea, that it has been found to recover under nearly every form of remedy that has been tried. The consequence is that a large number of *specifics* have been claimed for this disease, which in time have disappointed those who relied on them. There are so many cases which recover of themselves that it is frequently difficult to describe just how much good has resulted from any treatment that we have adopted. On the other hand, there are some cases that resist every form of medication, and persistently annoy the patient for years.

SCABIES. (See Itch.)

SCALD HEAD. (See Eczema.)

SCARLATINA, OR SCARLET FEVER.

Symptoms.—*The first or mildest form of scarlatina commences with loss of appetite, sometimes slight nausea, but rarely vomiting; a dull heavy pain in the loins and lower extremities, and occasional chills or shiverings, which are soon followed by fever. The surface of the body becomes hot, although the feet are sometimes cold. The pulse varies from 106 to 120; in some cases*

it reaches 140, and the thirst is urgent. On the following day, sometimes later, the rash appears upon the skin, but its commencement is not so regular as that of other eruptive diseases; sometimes it breaks out first on the face, or on the neck and upper part of the chest; at other times, on the trunk or on the limbs, and spreads, in the course of twenty-four or thirty hours, over the whole surface of the body and extremities. It consists of innumerable small red points so closely set together that the skin acquires a uniform red color, which has been compared to that of the shell of a boiled lobster, and feels rough to the touch, more particularly at the parts where it is brightest. The rash extends to the inside of the nostrils and month, to the tonsils or almonds of the ears, and over all the back part of the throat. The tongue is also covered with the rash, but it generally happens that its edges and point only present a bright red appearance, the surface being coated with white mucus. The eruption, in many instances, is not diffused over all the trunk of the body, but is distributed in large, irregularly shaped patches. The parts on which the body rests are of a bright raspberry-red tint; the color is also deeper at the folds of the joints, and is more vivid in the evening than in the morning. The skin is always intensely hot, and affected with troublesome itching. Sometimes there is considerable swelling of the face, of the throat, and of the extremities of the body, and occasionally a slight degree of delirium. The burning heat of the skin, the thirst, sickness at stomach, constipation of the bowels, and difficulty in swallowing become less severe in some instances when the rash breaks out, but more frequently they continue until it begins to disappear. (See Plate IV.)

The eruption loses its brightness and gradually diminishes towards the fifth day, and generally disappears on the seventh; the patient can now swallow with ease, and the fever has ceased. It frequently happens that perspiration or purging takes place at this time, or the urine deposits a quantity of sediment. On the seventh day, the cuticle or scarf-skin begins to scale off, and this process is completed on the tenth day. In some instances, the falling off of the skin is scarcely perceptible; in other cases, again, it continues to separate and peel off during two or three weeks; and as long as the scaling of the skin goes on, the patient is annoyed with a troublesome itching.

The second form of scarlatina, with severe sore throat, commences with stiffness of the neck and lower jaw, and the throat is affected before the feverish symptoms are manifested; these are much more urgent than in the simple form of the disease above



LEMON.—*Citrus aurantium*.



SANDAL.—*Pterocarpus santalinus*.



PEPPER.—*Piper nigrum*.



IRIS.—*Iris florentina*.



POMEGRANATE.—*Punica granatum*.



ANISE.—*Anthriscus officinalis*.

described, and precede the rash during two or three days. The edges of the tongue are red, and numerous red points are seen rising through the crust with which it is covered; the uvula or pap, tonsils, and all the back part of the throat are intensely red, painful, and so much swollen that swallowing is rendered distressing and difficult, sometimes impossible; and then, when the patient attempts to quench the burning thirst which constantly distresses him, the drink passes off through the nostrils. The breathing is more or less embarrassed, the voice is hoarse, and there is a very distressing sensation of constriction in the throat. The pulse is very quick, the skin hot, there is sickness at stomach and sometimes vomiting, great restlessness, headache, often delirium towards evening, and not unfrequently bleeding from the nose. The rash does not cover the whole body, but appears in broad, irregular patches; these often vanish, and again make their appearance on different parts of the body, at uncertain times. The red color of the skin is more particularly observed on the buttocks, about the loins, in the arm-pits and hams, and at the bend of the arms.

But the predominant symptom of this form of the disease is sore throat. In most cases the tonsils and back part of the throat and mouth are covered with specks or patches of adhesive matter (coagulable lymph) of a grayish-white or ash color, which at first sight might be mistaken for ulceration. These little masses or patches of lymph sometimes acquire a dark brown or black color, from being mixed with blood. When the throat presents this black appearance, the tongue and lips are often at the same time covered with dark-colored crusts. A very tenacious, tough phlegm also collects in the throat, and, by inducing the patient to make frequent efforts to get rid of it, greatly aggravates his sufferings. The throat may become slightly ulcerated, but this does not generally occur.

On the fifth or sixth day of the disease, sometimes later, the inflammation of the throat and the febrile symptoms begin to subside, while the rash grows less vivid, and gradually disappears. If the rash has been slight, the scarf-skin does not scale off, but in ordinary cases it is detached, as in simple scarlatina, and the scaly peeling of the skin often continues during two or three weeks, or even longer; in the more severe cases, the skin peels off the hands in large masses resembling portions of a glove.

The third or malignant form of scarlatina commences like the one last described, but the eruption appears at an earlier period, usually within twenty-four hours, advances slowly, and is seldom

of a bright red color. It often recedes suddenly, and reappears; and after some time the rose color which it first assumed changes to a livid-red hue. The pulse is very quick, varying in fatal cases from 120 to 140 even to the last moment; the eyes are bloodshot and watery, there is great heat of skin, with vomiting and oppression of the system. On the third day, or at an earlier or later period, low delirium comes on, and the pulse loses strength, although it still continues exceedingly quick; the tongue is covered with a dark-colored crust, and, in a word, the worst symptoms of typhus fever are present. The throat presents the same dark-brown or ash-colored appearance already described, and the breath is very offensive; but mortification or sloughing of the throat is not a frequent occurrence, even in fatal cases. The soft, pulpy gangrenous appearance of the tonsils and fauces arise from the exudations with which the mucous or lining membrane of these parts is covered becoming putrid from exposure to heat and moisture.

As the disease advances, the prostration of the vital powers increases, numerous purple-colored fever-spots make their appearance, and a disagreeable odor exhales from the skin. When young children are affected with this form of the disease they lie in a state of stupor, and the pulse is so quick that it can scarcely be counted.

In malignant scarlatina the system appears to be saturated with a peculiar poison, which constitutes, as it were, the essence of the disease, and while nature is struggling to expel this morbid matter the patient dies. This termination often occurs on the fourth or fifth day, sometimes on the third, and in many instances death does not take place till the second or third week. Some patients recover even when the urgency of the symptoms appeared to preclude all hopes of recovery, but in such cases the convalescence is always exceedingly tedious.

Various affections occasionally follow scarlatina, as swelling of the glands under the angles of the lower jaw, abscesses of the tonsils, inflammation of the ear, leaving a discharge of fetid matter, sometimes deafness; but the disorder most to be dreaded is dropsy, which not unfrequently attacks the patient during the second or third week after the disappearance of the rash. Dropsy occurs oftener, and is for the most part more dangerous in children than in adults, and is more frequently observed in winter than in summer. Before this affection makes its appearance the patient generally complains of depression of spirits, loss of appetite, and disturbed sleep; these symptoms are soon followed by quick, hard pulse, hot skin, constipation of the bowels, scanty urine, and much restlessness. The dropsical swelling is first observed in the eyelids; it

then attacks the face, the limbs; and soon extends, in many cases, to the whole body. When dropsy is confined to the external part of the body, there is comparatively little danger; but when in the belly, or in any of the internal cavities, the disease is then to be viewed in a more serious light.

Scarlet fever may sometimes be confounded with measles. The differences between them are these: in scarlet fever the eruption comes out on the second day, with sore throat, but no catarrh of the nose. Measles comes out on the third day, with catarrh of the nose. The eruption of scarlet fever is of a brighter red color than that of measles, and is more evenly diffused.

Scarlet fever is contagious, but it acts very capriciously. A great many who are exposed do not take the disease. Sometimes it runs through a family of children. It usually goes harder with adults than with children. Very rarely it attacks the same person twice.

It is pretty well established that the germs of the disease can be carried about the clothing of a person who has been exposed, and there is little doubt that these germs will keep for a long time. The germs may be carried in the hair after all the clothing has been changed. Those who have been exposed need, therefore, to be very cautious about visiting in families where there are young children.

Treatment.—The majority of mild cases recover without any special medical treatment.

The bowels are to be kept freely open by Epsom salts. *Sweet spirits of nitre* may be given in the ordinary doses.

The patient may drink cold water or suck ice to almost any extent.

The inflamed throat may be treated by a gargle of *vinegar and water*, to which a little capsicum or cayenne pepper has been added.

The surface of the body may be freely sponged with cool or tepid water.

Under this plan of treatment mild cases of scarlet fever will recover.

Malignant forms and cases attended with debility will need in addition *nourishing food*, such as *beef-tea*, chicken broth, etc.; *tonics*, such as quinine, phosphoric acid (see Phosphoric Acid), etc.; and in some cases *stimulants*, in the form of brandy, whiskey, or wine.

Sulphite of soda is now considerably used in malignant scarlet fever. It is supposed to be an antidote for the poison.

Solutions of *chlorate of potash* (one drachm to a pint of water) may be applied to the throat, and may also be taken internally.

It is very important the throat should be well treated, so that the *inflammation* may not enter into the *middle ear* and cause *life-long deafness*, and *perhaps ulceration of the ear, with discharge*.

The itching of the skin may be relieved by rubbing in sweet oil or glycerine.

The following prescription of Dr. J. Lewis Smith may be taken :

Carbonate of ammonia, $\frac{1}{2}$ drachm (2 grams),
Citrate of iron and ammonia, $\frac{1}{2}$ drachm (2 grams),
Simple syrup, 4 ounces (128 grams).

DOSE.—One table-spoonful every three hours, for a child three years old.

For the throat this gargle may be used :

Carbolic acid, 15 drops (.75 gram),
Chlorate of potash, 3 drachms (12 grams),
Glycerine, 3 ounces (96 grams),
Water, 3 ounces (96 grams).

Use as a gargle.

Belladonna in doses adapted to the age is also excellent in many cases.

Patients recovering from scarlet fever should not be allowed to leave their room for three or four days after the attack.

For the treatment of the dropsy that sometimes follows scarlet fever, see Dropsy.

Severe cases of scarlet fever demand the best skill, experience, and patience of the physician.

SCIATICA.

Sciatica is a very painful affection of the great sciatic nerve. This is the largest nerve of the body ; it runs from the posterior part of the hip-joint down the back of the thigh to the ham. In severe cases of sciatica, the pain extends along the whole course of the nerve, and is so distressing during the night that the patient is completely prevented from sleeping ; sometimes it is accompanied by quick hard pulse, thirst, foul tongue, and the usual symptoms of fever. In chronic cases the patient occasionally suffers from cramp, and a sensation of tingling and numbness is felt in the limb. In long-protracted cases the limb shrinks, and the patient has great difficulty in keeping it warm. This affection generally arises from exposure to cold and moisture, and occurs chiefly in adults and

people advanced in life. In females it not unfrequently comes on during pregnancy and after labor. Sciatica is a form of neuralgia. (For treatment, see Neuralgia; also Rheumatism.)

SCROFULA.

Scrofula, in the general sense of the term, consists of a morbid deposit, called tuberculous matter, which commonly appears in small tumors or knots called tubercles.

Symptoms.—The lungs are more frequently affected with scrofula than any other internal part; in that organ it is manifested at first in the form of numerous small tubercles, which, after remaining in a latent state during a longer or shorter period, gradually increase in size, then soften, and cause incurable consumption. (See Consumption.)

No age confers complete immunity from scrofula, but different periods of life render some organs more liable to be affected than others. The parts of the body in which the vital functions are most active are more particularly subject to the disease. Hence tubercles of the brain frequently occur in infancy and seldom in grown-up people, because in the former the brain is the seat of constant and strong functional action. The glands of the neck are most frequently affected during the process of teething, probably in consequence of the continued irritation about the jaws which this occasions. *External* scrofula seldom *originates* after puberty; on the other hand, consumption, or as it may be termed, scrofula of the lungs, chiefly occurs in adults, in consequence, it is presumed, of the greater activity of the lungs at this period of life. At a more advanced age, when the digestive organs are stimulated to a greater extent and the abdomen increases in size, the liver and other organs contained within that cavity are almost exclusively the seat of the disease. Irritation of the stomach and bowels may develop scrofulous disorders of the mesenteric glands at any time of life; this variety of the disease, however, is more commonly met with in children.

Scrofula appears to be so mixed up with the very elements of existence that it has the effect of modifying the symptoms of a great part of the diseases to which the body is liable. The effects of this influence are more particularly observed when syphilis and diseases of the eye occur in individuals of scrofulous constitutions; and the unmanageable and obstinate character which many inflammatory diseases acquire when modified by a scrofulous taint in the

system is well known to medical men. It is also well known that wounds and other injuries of the soft parts in scrofulous people are often very slow in healing. In many chronic diseases connected with scrofula it is frequently found necessary to administer tonic and stimulant remedies, which in the same diseases under other circumstances would be inadmissible.

Causes.—Many causes are said to give rise to scrofula; in fact every agent, moral or physical, which depresses the energies of the system tends to develop the disease. One of the most powerful of these is, without doubt, the long-continued action of a cold, moist atmosphere. The injurious influence of this cause will be greatly aided by defective or unwholesome diet, want of cleanliness, sedentary habits, living in confined situations, where the atmosphere is not renewed and the direct light of the sun is excluded.

There cannot be the slightest doubt that impure air and the absence of the direct solar rays exercise a powerful influence on inducing scrofulous affections; this is shown by their greater prevalence among the inhabitants of large towns than among those who breathe the pure air of the country.

We see the influence exercised by climate over this disease in the aggravation of the symptoms during the spring and winter seasons, whereas in the summer months scrofulous sores generally improve or disappear altogether. All external agents, all circumstances which reduce the energies of the system below the natural standard (more especially when conjoined with atmospheric humidity and cold), are exciting causes of scrofula. The children of scrofulous parents, under whatever circumstances they may be placed, are more liable to the disease than the children of healthy parents in parallel circumstances.

Treatment.—Our limits will not allow us to notice in detail the various means recommended to prevent the development of the disease in children predisposed to it; but we may say with the celebrated philosopher, Hünter, “let an infant have plenty of sleep, plenty of milk, and plenty of flannel;” these, when conjoined with plenty of pure air, are the principal objects in domestic treatment to be observed during infancy, and should be strictly attended to from the very first hours of birth.

The cold bath is improper for newly-born or very young children; in the delicate, and those in whom there is reason to suspect a disposition of scrofula, it increases the debility, and may lead to very injurious consequences. The cold bath, however, agrees well with many children; this is evinced by their soon becoming warm and appearing lively after being taken out of the water, whereas

in others it has an opposite effect; they continue chilly and pale for some hours afterwards, and the faculties of the body appear, as it were, overpowered. But although cold bathing is generally inadmissible, washing the body with warm or tepid water is necessary, not only with respect to cleanliness, but also to promote the healthy functions of the skin.

As the child grows up constant care is required in regulating the diet. This should consist principally of animal food, taken at regular intervals, but never in such quantity as to overload the stomach.

All healthy children have a natural desire for exercise, than which nothing is more conducive to the digestion of the food, the circulation of the fluids, and the health and growth of the body. To scrofulous children, or those who have a predisposition to the disease, plenty of exercise is indispensable; and should always be taken in the open air when the weather is fine; otherwise they should be allowed to play in a well-aired room. A judicious writer of the last century, Dr. Cheyne, speaking of the advantage of exercise to children, says: "'Tis beautiful to observe the earnest desire planted by nature in the young persons to *romp, jump, wrestle, and run*, and constantly be pursuing *exercise* and bodily *diversions* that require labor even till they are ready to drop down, especially the healthier sort of them, so that sitting or being *confined* seems to be the greatest *punishment* they can suffer; and imprisoning them for some time will much more readily correct them than *whipping*. This is a wise contrivance of nature, for thereby their joints are rendered *pliable* and *strong*, their blood continues sweet and proper for a full circulation, their perspiration is free, and their organs stretched out by due degrees to their proper extension."

Without the assistance of pure country air, children are not likely to derive much benefit from any other means. We ought therefore to make choice, as far as lies in our power, of a dry and temperate atmosphere, untainted with exhalations, and known by experience to be salubrious; and sudden extremes of heat and cold should be avoided as much as possible.

Sea-bathing, when judiciously managed, is one of the most valuable remedies that can be employed in scrofulous disorders. In delicate children the sea water should be used warm at first, then tepid, reducing the temperature by degrees until the system is prepared to withstand the shock of immersion in the open sea.

All scrofulous people of delicate constitution, and those affected with chronic diseases, should wear flannel constantly next

the skin; this is the best safeguard in protecting the body from the injurious influence of damp and variable climate, and, although it may be worn of a thinner texture during the warm weather, *should never be entirely thrown off*. Flannel gently stimulates the skin, promotes the insensible perspiration, while it absorbs the moisture as it is thrown out, and tends greatly, under all circumstances, to keep up an equable temperature; this last is an object of much importance where there are great and often sudden vicissitudes of the temperature of the climate.

The giddy practice of throwing aside our winter garments too early in the spring, and of exposing our bodies, when overheated, to sudden colds, has destroyed more than famine, pestilence, and sword.

Much depends, in counteracting the disposition to scrofulous maladies, upon the management of childhood. If the physical education of early life is of the utmost importance, the moral training, even from the earliest dawn of reason, also demands the strictest attention. Parents should commence early to discipline the minds of children and *train them to habits of obedience, for on this their future health in a great measure depends*. How often do we see that those who have been over-indulged and pampered when children are unable in after life to control their appetites and passions, and thus cause the disease to be lighted up in the lungs, when it otherwise might have remained quiescent or inactive during a long lifetime.

A remedy much used, and which is generally understood to possess a greater influence in overcoming scrofulous affections than any other medical agent hitherto discovered, is *iodine*.

Iodine, 1 grain (.065 gram),
Iodide of potassium, 2 grains (.13 gram),
Distilled water, 8 ounces (256 grams).

To a child under seven years of age, a dessert-spoonful of this mixture is to be given three times a day, in half a teacupful of water sweetened with a little sugar.

The dose should be gradually increased to two table-spoonfuls, and the remedy is to be continued, if no untoward symptoms occur, for a period of four or five weeks; its use is then to be suspended, and gentle laxatives are to be administered. After an interval of a fortnight the mixture is to be again administered, commencing with a dessert-spoonful, and gradually augmenting the dose as before. At the expiration of a month the remedy is to be again discontinued,

and again renewed. In this manner iodine may be employed with perfect safety, and continued until the cure is accomplished.

For adults the following formula will be found convenient:

Iodine, 10 grains (.65 gram),
Iodide or hydriodate of potash, 20 grains (1.29 gram). Mix.

From four to twelve drops to be taken in a glass of water, three or four times a day.

During the internal administration of iodine, the following ointment may be employed externally:

Ioduret of lead, 1 drachm (4 grams),
Lard, 1 ounce (32 grams). Mix.

About the size of a nutmeg, or a larger or smaller quantity according to the bulk of the swollen glands, is to be rubbed in every night during six minutes.

In adults it should be applied in this manner twice a day. This ointment, spread on soft linen or lint, is also an excellent application to scrofulous sores.

In addition to iodine, and in connection with it, scrofulous patients do well to take *cod-liver oil*, *malt*, *cream*, *the phosphates*, and abundance of nourishing food—beef, mutton, fish, and beef-tea—out-door air, sunlight, sea-bathing, and all tonic measures.

Iron also should be used, the *muriated tincture* or the *dialyzed iron*, in doses of from ten to twenty drops (.5 to 1 gram).

Scrofulous diseases oftentimes fall into the domain of surgery, and demand operative procedures and mechanical appliances. (See Hip Diseases; Spine, Diseases of.)

Scrofula can never be cured rapidly, inasmuch as it is the result of a morbid change affecting the entire organization of the body; and we repeat, that the best means not only of preventing, but of controlling and removing; this obstinate disorder are proper diet and clothing; pure, dry, and warm air; and regular exercise. It must also be borne in mind, that though the medicines above mentioned are of the greatest service, it is only when they are employed with steady and patient perseverance, aided by the strictest attention to the rules requisite for the improvement of the general health.

SCURVY.

Scurvy evidently arises from a depraved state of the blood, caused chiefly, if not altogether, from want of fresh animal and

vegetable food. The blood, when in a natural state, stimulates and nourishes every organ and structure of the body ; but when this vital fluid is altered in quality, it is no longer capable of fulfilling the purpose for which it is destined, and the whole animal economy suffers in consequence.

Symptoms.—The first symptoms which announce this morbid change in the circulation are general weakness, disinclination to move about, great lassitude after any ordinary bodily exercise, dull, heavy pains in the back and limbs, great depression of spirits, disturbed sleep, weak and frequent pulse, loss of appetite, slow digestion, cold dry skin, hurried breathing and palpitation of the heart on walking a little quicker than usual, or from any other bodily exertion. A sailor, for example, on going aloft experiences the two last-mentioned symptoms, along with a sensation of giddiness, and a feeling as if he were about to faint.

This stage of the disease often continues a considerable length of time, and is at first little noticed ; but at last the signs which more particularly characterize the disease make their appearance. The skin, which is at first unusually pale, gradually assumes a dingy yellowish hue ; the face looks puffed or bloated ; the gums become swollen, dark, red-colored or livid, spongy, and bleed from the slightest friction. As the disease advances the teeth loosen, the gums ulcerate ; fungous excrescences shoot up from the ulcers, and the breath acquires an exceedingly offensive smell. The urine also emits a peculiarly disagreeable rank odor, and appears muddy and high-colored. While the gums become gradually affected in the manner above described, dark-colored spots at the same time make their appearance on the calves of the legs, on the thighs, sometimes on the arms and back, rarely on the face ; these run into each other, and form large blotches of a yellowish, greenish, or livid color, similar to the marks which follow bruises or blows. The small, round, purple-colored spots and the large, discolored, bruise-like patches are most frequently seen on the lower extremities, and both are the consequence of effusion from the blood-vessels. Ulcers in many cases form on the legs, and soon present an appearance peculiar to scurvy ; the edges of the sore are of a purplish color, and appear as if inflated ; a thin acrid fetid matter is at first discharged ; but as the disease advances, a dark-colored covering of coagulated blood is deposited upon the surface of the ulcer, which is not easily removed, and is soon replaced by a similar coagulum. The surface of the sore under this dark-colored mass is soft, putrid, and spongy, like the gums, and bleeds from the slightest cause. As the disease gains ground, the knee-joints con-

tract, the hams become swollen, hard, and painful; and in two cases we have seen, the calves of the legs were hard like a piece of wood, so that the skin covering them could not be pinched up between the finger and thumb. In most cases the nostrils bleed occasionally, and blood is discharged from the bowels. Such are the symptoms of scurvy as we have observed them on board of ship in northern latitudes, all of which vanish in a surprisingly short time when the natural remedies—vegetables and fresh animal food—can be procured.

Towards the termination of the disease, one of the most remarkable symptoms is the tendency to swooning on any bodily exertion. It has also been observed that the appetite for food generally continues to the last. "Many of our people," says Mr. Walter, in the *Narrative of Lord Anson's Voyage*, "though confined to their hammocks, ate and drank heartily, were cheerful, and talked with much seeming vigor, and in a loud, strong tone of voice; and yet, on their being the least moved, though it was only from one part of the ship to another, and that in their hammocks, they have immediately expired; and others, who have confided in their seeming strength, and have resolved to get out of their hammocks, have died before they could well reach the deck. And it was no uncommon thing for those who could do some kind of duty and walk the deck to drop down dead in an instant on any endeavors to act with their utmost vigor; many of our people have perished in this manner during the course of the voyage."

Causes.—The grand cause of scurvy is the want of fresh animal and succulent vegetable food, more especially of the latter; and the disposition to the disease from this cause is, no doubt, greatly promoted by long exposure to a cold damp atmosphere, fatigue, long-continued watching, deficient exercise, mental distress, and, in a word, all the debilitating causes which depress the powers of life.

Treatment.—Such is the power which we now possess in preventing scurvy that many surgeons of the British navy of long standing have never seen a case of it. But the crews of merchantmen, during long voyages, often suffer severely from this disease, in consequence of being obliged to live on unwholesome food; from this cause alone many valuable lives are annually lost. Hard bad beef and worse biscuit constitute the only food which the sailors in some vessels are allowed for weeks together. The biscuit is often so hard that it cannot possibly be masticated without previously soaking it in water.

The means to be adopted in order to preserve the general health of seamen, and consequently to prevent scurvy, consist in wholesome food ; that is to say, the articles of victualling generally used on board of ship should be sound, and of good quality ; in an abundant supply, when in port, of fresh animal and vegetable diet, more especially of succulent vegetables and fruit ; in a plentiful supply of lemon-juice, without which no vessel should ever proceed on a distant voyage ; in personal cleanliness, exercise, and cheerfulness ; and in strict attention to ventilation, cleanliness, and dryness of the ship.

Lemon or lime juice, in the absence of fresh vegetables or fruit, is now admitted on all hands to be the best preventive of scurvy, and also the best remedy after the disease makes its appearance. This juice is preserved by mixing a tenth part of brandy with it. The first account we have of the use of lemon-juice in scurvy is in a curious old work by John Woodall, surgeon of St. Bartholomew's Hospital, published in 1636, entitled the "Surgeon's Mate, or Military and Domestic Medicine." "And further experience," says the author, many of whose observations are very judicious, "teacheth, which I have oft found true, that where a disease most reigneth, even there God hath appointed the best remedies for the same grief, if it be his will they should be discovered and used ; and note, for substance, the lemons, limes, tamarinds, oranges, and other choice of good helps in the Indies, which you shall finde there do farre exceed any that can be carried thither from England ; and yet there is a good quantity of juyce of lemons sent in each ship out of England by the great care of the marchants, and intended onely for the reliefe of every poore man in his neede, which is an admirable comfort to poor men in that disease ; also, I finde we have many good things that heal the scurvy well at land, but the sea chirurgeon shall do little good at sea with them, neither will they indure. The use of the juyce of lemons is a precious medicine, and well tried, being sound and good ; let it have the chiefe place, for it will deserve it ; the use whereof is : It is to be taken each morning, two or three spoonful, and fast after it two hours ; and if you adde one spoonful of *aquavita* thereto to a cold stomach, it is the better. Also, if you take a little thereof at night, it is good to mixe therewith some sugar or to take of the syrup thereof is not amisse. Further note, it is good to be put into each purge you give in that disease. Some chirurgeons also give of this juice daily to the men in health as a preservative, which course is good if they have store, otherwise it were best to keep it for need. I dare not write how good a sauce it is at meat, least the chiefe in the

ships waste it in the great cabins to save vinegar. In want whereof, use the juice of limes, oranges, or citrons, or the pulpe of tamarinds." In another part of the work he remarks: "And generally note, that bitter and sower medicines prevail most to the cure of this griefe, amongst which you have that are approved good there-to; those that follow as chiefe, juyce of lemmons, of limes, of citrons, and oranges. In like manner, the juyce or pulpe of tamarinds hath a great acetositie, and is found a precious remedy against the disease."

Another excellent and cheap remedy, though inferior to lemon-juice, is *sour kroust*, which "is prepared by slicing the soundest and most solid cabbages in the way cucumbers are used in this country. In this state they are put into a barrel in layers, hand high, and over each is strewed a handful of salt and caraway seeds; in this manner it is rammed down, layer above layer, till the barrel is full, when a cover is put over it, and it is pressed down with a heavy weight. After standing for some time in this state it begins to ferment, and it is not till the fermentation has entirely subsided that the head is fitted to it, and the barrel is shut up and prepared for use."

The preparation of oatmeal, well known in Scotland under the name of *sowens*, has been proved to be very efficacious both in preventing and curing scurvy. It is prepared by putting some oatmeal into a wooden vessel, pouring hot water upon it, and allowing it to stand for two or three days in a place moderately warm until the liquid ferments and becomes sour. The liquid is then removed from the grounds and boiled to the consistence of a jelly; it may be sweetened with raw sugar and flavored with a little cinnamon.

When no lemon-juice can be procured, good effects result from the use of an ample daily allowance of *molasses* and *vinegar*.

A great variety of medicines have been employed in scurvy; but they are all insignificant in comparison with fresh succulent vegetable juices, as lemon-juice, etc., and it appears questionable whether they ever produce any good effect.

Patients are sometimes much troubled with constipation of the bowels. When this occurs, *castor-oil*, tincture of rhubarb, and sulphate of potash will be found the best laxatives. From three drachms to an ounce or more of the latter dissolved in a basin of thin gruel operates mildly, and is perhaps the best opening medicine that can be employed. Opiates at bedtime produce sleep and relieve the patient greatly during the night, but on the whole they do more harm than good. Mercury is decidedly injurious, and

ought never to be given under any circumstances, not even when the disease is complicated with syphilis.

The best wash for the mouth is a weak solution of *chloride of lime*, or *chloride of soda*, or *chlorate of potash*. These may also be used as a local application to ulcers which are induced by the disease. For these, lint soaked in lemon or lime juice, diluted with twice or thrice its quantity of water, is recommended. It is always advisable in such cases to cover the dressing with oiled silk to prevent evaporation. A *solution of alum* in water, in the proportion of two drachms to the quart, is an excellent application for spreading or sloughing sores of this kind.

On the subject of scurvy I quote the following very interesting remarks from Aitken :

“The early history of navigation, as it records the greatest ravages of scurvy, so does it also record the best antidote to the disease. Of four ships which sailed from England in the beginning of April, 1609, for the establishment of the East India Company, they were all so severely visited by scurvy as to have lost nearly one fourth of their crews when they arrived at the Cape of Good Hope. The crew of the Commodore's ship was not attacked. This immunity arose from three table-spoonfuls of lemon-juice having been served daily to each of his men. But notwithstanding this evidence of the success of lemon-juice in preventing scurvy—evidence the most conclusive—this valuable remedy and preventive was altogether slighted for a hundred and fifty years afterwards.—*Copland*. Lord Anson's people, in 1740, on reaching the Island of Tinian were recovered principally by eating oranges; and that noble, brave, and experienced commander was so convinced of their usefulness that, before he left the island, he ordered one man from each mess to lay in a stock for future security. Sir Charles Wager's people, also, were terribly afflicted with scurvy in the Baltic. Sailing, however, in the Mediterranean, and having heard how effectual oranges and lemons were in the cure of this disease, he took on board at Leghorn a large quantity of them, ordered a chest each day to be brought on deck, and allowed the men, besides eating what they chose, to mix the juice with their beer, and to pelt each other with the rind, so that the deck was strewed with the fragrant liquor. By these means he brought his men home in good health.

“In the year 1747, Dr. Lind made some comparative trials between this and some other modes of treatment (as vinegar, sulphuric acid, and tamarinds) on board the ‘Salisbury,’ at sea. As a general conclusion from his experiments, he affirms that orange and

lemon juice, or, more properly, the citric acid obtained from all the species of the botanical genus *Citrus*, or the natural order of fruits called *Hesperidæ*, are greatly more efficient than any other remedy in the cure of scurvy.

“Notwithstanding this strong opinion of Dr. Lind, the navy continued to suffer severely from scurvy for half a century, till the Admiralty gave a general order for the supply of lemon-juice. This salutary measure was accomplished by a representation from the Medical Board of the Navy, in the year 1795, when Lord Spencer was First Lord of the Admiralty, after a trial made on board the ‘Suffolk,’ of seventy-four guns.

“This ship sailed from England on the 2d of April, 1794, supplied with a quantity of lemon-juice sufficient to serve out two thirds of a liquid ounce daily to every man on board, and this was mixed with their grog, with two ounces of sugar. She arrived at the Madras roads on the 11th of September, after a passage of twenty-three weeks and one day, without having had any communication with the land, without losing a man, and having only fifteen on the sick-list. Scurvy appeared in a few of the men during the voyage, but disappeared on an increased dose of lemon-juice being administered. ‘Let this fact,’ says Sir Gilbert Blane, ‘be contrasted with the state of the Channel fleet in 1780, when Admiral Geary’s fleet returned into port after a ten weeks’ cruise in the Bay of Biscay, with 2400 men ill of scurvy; and let the state of this fleet be contrasted with that of the Channel fleet in 1800, which, by being duly supplied with lemon-juice, kept the sea four months without fresh provisions, and without being affected with scurvy.’”

The same authority advises the following course of treatment :

“1. Keep a supply of fresh vegetables by all means in our power. Even unripe fruits are better than none, and we must risk a little diarrhea for the sake of their anti-scorbutic properties. In time of war every vegetable should be used which it is safe to use, and when made into soups all are tolerably pleasant to eat.

“2. The supply of dried vegetables, especially potatoes, cabbage, and cauliflowers, turnips, parsnips, etc., is perhaps less useful; dried peas and beans are useless. As a matter of precaution, these dried vegetables should be issued early in the campaign, but should never supersede the fresh vegetables.

“3. Good lemon-juice should be issued daily (one ounce), and it should be seen that the men take it.

“4. Vinegar (half ounce to one ounce daily) should be issued with the rations, and used in the cooking.

“5. Citrates, tartrates, lactates, and malates of potash should be issued in bulk, and used as drinks or added to the food.

“The easiest mode of issuing these salts would be to have packets containing enough for one mess of twelve men, and to instruct the men how important it is to place them in the soups or stews. Possibly they might be mixed with the salt, and issued merely as salt.” —*Pract. Hygiene*, 2d ed., 1866, p. 466.

It should be remembered that scurvy is not confined to the sea. It may also break out, though usually in a milder form, on land, among those who are fed on a too exclusive diet, and are long deprived of acids and fresh good food. Scurvy is a powerful argument against *exclusiveness* of diet. Man needs a variety of food.

SEA-SICKNESS.

This affection is very common and very disagreeable, and by no means as beneficial as is commonly believed.

I regard sea-sickness as essentially a nervous disorder—a disturbance of the nervous system caused by the motion of the ship. Just what this disturbance is, just how the nervous system is affected, science has not yet demonstrated. It is not necessary to go to sea in order to be sea-sick. Many experience sensations similar to those of sea-sickness when they travel by the cars or by the stage, or when they swing or rock in a chair.

The nervous and delicate are more liable to sea-sickness than the hardy and strong. Therefore women suffer more at sea than men.

A friend of mine who has been in the employ of the Children's Aid Society, and who in that capacity has had charge of transporting many hundreds of children to the West, once told me that he always expected that many of the company would be sick after travelling a day or two in the cars.

The difference between the sickness of those who travel by land and those who travel by sea seems to be only one of degree, and not of kind.

The term sea-sickness is really an unfortunate one. *Travellers' sickness* would better express the character of the disease.

Symptoms.—Sea-sickness is not always or necessarily accompanied by *vomiting*. Headache—quite similar in its sensations to the ordinary sick headache—is a very common symptom.

Great exhaustion, constipation, are among the unpleasant symptoms that accompany or follow the disease.

I have said that sea-sickness was not as beneficial a process as is commonly supposed. There are many who, after a voyage at sea or a long trip by land, find it necessary to rest for several days before they recover their usual strength.

The benefit that comes from a voyage by sea or a trip by land is due to the change of scene, the passive exercise, the prolonged rest, the freedom from labor and anxiety, and the tonic effects of the air. These influences are beneficial in spite of the sea-sickness.

On this subject I speak from a considerable observation and personal experience while acting as surgeon in the navy.

I then improved my opportunities to study the treatment of this disease, and I came to the conclusion that it is by no means wholly unrelievable.

Treatment.—The plan of prevention and treatment that I propose is as follows :

1. Go on board of the ship in as good a condition as possible. It is not necessary to use violent purges. The great thing is to have the nervous system in as healthy a state as is possible, consistently with the labor of preparation. Those who embark in a condition of exhaustion will be likely to be the greatest sufferers from sea-sickness. *Eat a substantial meal just before embarking.*

2. Before the vessel is fairly at sea—better still (as Dr. Fordyce Barker advises), before she leaves her moorings—retire to your berth in some loose clothing, and lie flat on your back for at least twenty-four hours. Do not get out of your berth at all, if it is possible to avoid it. Give no heed to those who urge you to go on deck.

3. Eat some light and digestible food three or four times a day. Do not allow the stomach to be long empty.

4. If nausea or headache comes on, try the following remedies: *Tincture of capsicum* (cayenne pepper).—A few drops of this in a tumbler of water should always be kept at hand. Whenever unpleasant sensations arise in the stomach or head, take a swallow. I have found this to be a most excellent remedy.

Inhalations of nitrate of amyl.—It is claimed for this remedy that it has a speedy and satisfactory effect in sea-sickness. Inhalations of *chloroform* may also be tried with proper precautions by a physician.

Prof. Carl Binz, of Bonn, Prussia, recommends the following: Mix equal parts of nitrate of amyl and alcohol. Take a dozen or so deep inhalations from the bottle as soon as the nausea begins. Repeat whenever it returns, and “confidence” will soon be restored. After an hour or so it will be no longer necessary.

Oxalate of cerium.—This may be taken dry on the tongue. The dose is about as much as can be placed on the point of a pen-knife.

Ice to the spine. (See Ice-bags.)

This method of treatment is strongly recommended by Dr. Chapman, the inventor of the ice-bags. Although his theoretical arguments are not yet susceptible of demonstration, yet practically the application of ice to the spine exercises great power over the nervous system. The remedy is worthy of a trial. It is not necessary to have ice-bags. Pieces of ice may be wrapped in a towel and applied to the spine.

The advantage of the ice-bags is that they are neater and more convenient than any other method of applying ice to the spine.

5. *Electricity* and *hypodermic injections* have been recommended for sea-sickness. These remedies, however, can only be used by a physician, or at least by some unusually reliable and skillful attendant.

The hypodermic injection of *atropine*, in doses of from $\frac{1}{100}$ to $\frac{1}{25}$ of a grain (.0006 to .0024 gram), is certainly a good remedy for sea-sickness.

The *faradic* current of electricity applied on the stomach and spine is also very valuable in all forms of vomiting.

After spending twenty or thirty hours in the berth, it will usually be safe to go on deck, unless the sea should be exceedingly boisterous.

It is well to prepare the few simple medicines before embarking, and to have them near at hand.

Mental diversion and *force of will* assist very materially in the prevention of sea-sickness. One of the best methods of diverting the mind is reading novels or other entertaining works.

Whenever I take a sea-voyage I always take with me some light and entertaining reading, as an indispensable part of my outfit. One can read, with some little difficulty, while reclining in the berth.

SEMINAL EMISSIONS—INVOLUNTARY EMISSIONS— NOCTURNAL EMISSIONS—SPERMATORRHEA—IM- POTENCE—SELF-ABUSE.

For one who is unmarried and in good health, the voluntary emission of seminal fluid is, within reasonable limits, both natural and healthful. The question now arises, What is meant by the term inordinately frequent? This it is impossible to answer mathe-

matically. I have said that it was impossible to lay down any rules concerning the quantity of food that we should take, or of stimulants and narcotics that we should use, that should cover every case. Just so it is impossible to say how many emissions of seminal fluid can be borne without injury. Some are apparently injured by one emission a week, while others have several weekly, and maintain perfect health and strength.

Seminal emissions should *never excite any alarm so long as our health in other respects remains good.*

Let the genital organs take care of themselves so long as our digestion is good, our sleep sound, and our strength firm; and when we do begin to take treatment, take the first and chief care of the general system.

When a nocturnal emission, without our worrying about it, is followed by sleeplessness, headache, depression, and debility, we may know that it does harm.

Seminal emissions are frequently the cause of nervous and other diseases.

In science, as in other departments, serious mistakes are made by confounding effects with causes.

Seminal emissions are the *effects* as well as the causes of disease, and should be so considered.

Anything that weakens the nervous system may bring on seminal emissions. Exhausting fevers, dyspepsia, diseases of the brain and spinal cord, constipation, etc., etc., may give rise to over-frequent seminal emissions. Persons recovering from exhausting diseases oftentimes experience this trouble for several weeks. It usually lasts for a short time only, and disappears as the patient resumes his usual strength. The great fact to be remembered is that seminal emissions, when in excess, are symptoms of general debility, as well as cause debility.

There is no question that in turn they do have a debilitating influence on the system, but only when they are in considerable excess, and by no means to the extent that is commonly supposed.

The great majority of cases of seminal emissions can by proper treatment and hygiene be substantially cured.

Self-treatment in these cases is to be avoided. In this disease of all others one needs a medical adviser in whom perfect confidence is placed. The worst results come when patients treat themselves, and all the time read and worry about the disease. Better far no treatment at all than such kind of treatment; better let the disease take its own course, and trust to time and nature and marriage for a cure. *I have known personally of very many young men who*

have passed through difficulties of the kind and are now well and the fathers of healthy families.

There are cases of insanity, of imbecility, and of death brought on by self-abuse and spermatorrhea.

I have seen a number of cases where long-standing trouble of this kind, combined with *masturbation* and *worry*, have induced a chronic condition of nervous debility that seemed almost if not quite incurable.

This leads us to the consideration of the important subject of

SELF-ABUSE—MASTURBATION—ONANISM—SEXUAL HYGIENE.

This habit, when commenced early and carried to a great extreme, injures the nervous system, but it acts very differently with different constitutions. It makes a very material difference whether the habit is begun in very early life or after the age of twenty.

The earlier the habit is formed, other conditions being the same, the more injurious it is. In some cases infants and children of four, five, or six years of age are taught this habit by their nurses, or acquire it in some other way.

The habit is almost universal. It is indulged in by both sexes. It is not confined to civilized lands. The semi-barbarous and the savage are addicted to it. It is not confined to the human species, for animals also acquire it.

In order not to be misunderstood on this important subject, I sum up my views in the following propositions:

1. The involuntary emission of seminal fluid, occurring now and then in the unmarried, is *not usually a disease*, and therefore does not, in the majority of cases, need any treatment. For an adult male in good health, and who is unmarried, it is a process that is a natural result of his continence, and is not usually injurious. The stopping of the habit of self-abuse is usually followed by involuntary emissions.

2. In some cases the emissions are so frequent that they may be regarded as a *symptom* of a relaxed and debilitated condition of the body, and should be treated, if they are treated at all, *not locally alone*, but also by *strengthening the general system*. The cases where these involuntary emissions are directly injurious to the constitution are much less frequent than is commonly supposed. In many cases excessive frequency of seminal emissions is an *effect* rather than a cause of disease.

3. The number and frequency of emissions that may be con-

sistent with perfect health *cannot be determined by any mathematical rules*. What may be a sign of perfect health in one may in another be a symptom of general debility. It is just as impossible to lay down mathematical rules that will apply to all constitutions on this subject, as it would be to lay down definite rules concerning the quantity of food that we should eat, of water that we should drink, or of exercise that we should take.

4. The true way to treat seminal emissions when they are, or are supposed to be, more frequent than is consistent with health is by a combination of sedative and tonic measures, designed to act both upon the genital organs and on the nervous system. The remedies that physicians now chiefly use for this purpose are *ergot* in its different forms, electricity locally and generally applied, iron, the zinc combination, bromide of camphor, lupulin, belladonna, *digitalis*, conium, gelsemin, and nux vomica, with the addition of passing the urethral sound, urethral electrode, rectal electrode, and the use of the cooling catheter. Surgeons also use urethral suppositories of various kinds, and application of ointments. Take good care of the general health. Strengthen the constitution by every agreeable method. Live generously. Work hard, keep brain and muscle active.

This advice, if acted upon, would save a multitude of unnecessary sorrows.

As soon as convenient get married, but at all events keep diligently at work.

Sometimes those who are married, and have abundant opportunity for sexual intercourse, are yet annoyed by involuntary emissions. A number of cases of this kind have come under my observation.

This fact shows that marriage alone is not always a perfect cure for these difficulties. It is, however, true that the majority of young men afflicted with too frequent emissions are better off when happily married.

5. In those exceptional cases where there is some real difficulty of the genital apparatus—some irritability of the urethra, or other slight morbid condition—do not attempt self-treatment, but consult some honorable and judicious physician, in whom you have reason to feel confidence, and submit to his direction just as you would for any other disease.

Any injury that comes from this habit or from excessive sexual intercourse is due not so much to the loss of the semen—which is comparatively a trifling matter—as to the *nervous excitement*. *It*

also destroys *self-respect*, and thus the sufferer is led to worry over himself, and to be tortured by remorse.

True *spermatorrhea*, or flowing away of the semen at stool or with the urine, is a disease of which I have seen many instances. Only a microscopic examination can settle the question in any suspected case. When it exists, it indicates a severe but not incurable debility of the parts. The secretion that comes from the urethra, which is normal and healthy, is often supposed to be true semen.

IMPOTENCE.

Impotence is sometimes a disease of the *imagination*. To one person who is really incapable of performing the sexual act there are two who suppose themselves to be so.

Impotence may, however, be a genuine disease, somewhat analogous to dyspepsia. It appears in the following forms:

1. Slight deficiency both of desire and capacity.
2. Deficiency of capacity with *increase* of desire. This is sometimes found in the early stages of spinal disease. In these two forms the emission may come *too* early or even before introduction.
3. Profound deficiency both of desire and capacity.

In this form the testicles are sometimes atrophied, and the penis is cold and somewhat benumbed or anesthetic. Power of erection may be utterly wanting or very weak.

4. Erectile power increased abnormally, but no discharge of seminal fluid. This condition is called *priapism* and *aspermatisim*.

Impotence is to be treated by the use of electricity, locally and generally applied; the use of sounds; and internally by phosphates, oil, ergotine, small doses of cantharides and iron, and *nux vomica*. Chloride of gold is also used; likewise *damiana*. No two cases are to be treated precisely alike.

In some cases the prepuce is drawn over the gland penis, and the operation of circumcision must be performed by the surgeon before the patient will recover.

When there is stricture, it must be cured by surgical means. Go to work. Develop your muscles and brain. Resolve to become useful or famous. The activity which will be necessary in carrying out these ambitions will divert your mind from your imaginary evils if they are imaginary, and will be one of the best means of cure if they are real.

In the great majority of cases, patients after their marriage forget all about their imagined impotence. I have, however, known

one or two exceptions to this rule. Only the physician can decide in any doubtful case.

It is very natural to inquire why it is that young men are so inclined to worry and become hypochondriacal on imagined disorders of the genital organs. Why is it that the slightest disease or suspicion of disease of the genital apparatus causes such absurd and unnecessary mental depression? The explanation is to my mind quite clear. *The great sympathetic nerve is at fault.* This nerve sends prominent branches to the *stomach* and to the *genital organs*. Therefore these three—the *brain*, the *stomach*, and the *genital apparatus*—are in very distinct and close sympathy with each other. They form a kind of family. They are in constant telegraphic communication with each other, and any injury of one is soon felt by the other two. It is partly for this reason that sexual disorders so often excite *neurasthenia* or nervous exhaustion. (See *Neurasthenia*.)

In the light of this explanation we see also why it is that *dyspepsia* so frequently causes depression of spirits.

Another reason why patients worry over and exaggerate their genital difficulties is the peculiar and, to a certain extent, unnecessary privacy that is associated with the genital function. The desire for sexual intercourse is the most powerful passion of human nature, for the reason that it is indispensable to the perpetuation of the species, and yet children are brought up in blank ignorance of the structure and functions of these organs; are *compelled* to learn through vile associates and evil communications what they should have been taught at home and under parental guidance.

Finally, patients get false and exaggerated ideas on these subjects through the published writings of quacks, for the profession have written little or nothing for the people concerning the genital apparatus.

CONJUGAL HYGIENE.

In connection with this general subject of sexual hygiene, conjugal hygiene may very properly be referred to. On this subject I may remark:

First. Normal sexual intercourse, when not carried to excess, is a sedative and tonic. It promotes sleep, calms and strengthens the nervous system, and assists the digestion and all the other functions.

Secondly. Excess in intercourse is a relative term. Just as in eating and drinking, what one may bear with ease may be very

harmful to another. The tendency with the majority of people is to indulge more frequently than their constitutions will allow. Much of nervous disease is excited or aggravated by ignorance of or inattention to sexual hygiene.

I have seen a number of cases of sexual and nervous debility where even one coitus a week would be followed by sleeplessness, nervousness, headache and depression, and other symptoms of neurasthenia, or nervous exhaustion. (See Neurasthenia.) Such cases, however, are unusual.

Thirdly. The system, as a rule, can recover from the ill effects of conjugal excess, provided good treatment and hygiene are employed. One should not be discouraged because of the excesses of youth, but reform and recover from their effects. As a rule, *functional* and not organic diseases are caused by sexual excess.

Fourthly. The unnatural methods of intercourse, such as withdrawal, and the use of condoms and like devices, are of necessity more harmful than natural intercourse, and they are made worse by the fact that when practised these devices encourage excess in the act; indulgence is more frequent because more safe. It should be added, also, that *prolonged* intercourse and dalliances without gratification are especially hurtful; in this way lovers are sometimes injured.

The evil effects of all these habits vary with the temperament. It is equally wonderful how much some can bear and how little others can bear in the way of natural or unnatural indulgence. (See Sexual Exhaustion.)

SEXUAL EXHAUSTION (*sexual neurasthenia*)—SEXUAL DEBILITY.

Under the heading *Neurasthenia* (nervous exhaustion), I have described a large number of symptoms that belong to the conditions popularly known as "general debility," "nervous prostration," and so forth. Under the headings "Seminal Emissions," "Spermatorrhea," the dependence of nervous diseases on abuse and disease of the genital organs has been very briefly suggested. It remains to say a few words on the special phase of nervous exhaustion (*neurasthenia*) known as sexual exhaustion, and to which I apply the term *sexual neurasthenia*.

Certain nervous symptoms, such, for example, as aversion or turning away of the eyes, abnormal sweating of the hands, dilated pupils, are very frequently the results and accompaniments of disorder of the genital system; they may follow the long-kept-up habit of masturbation, or frequent seminal emissions.

The almost uniform history of the cases of sexual exhaustion that I see is early masturbation and involuntary emissions, following the breaking up of the habit; then come the symptoms above described.

In some of these cases there is an elongated prepuce—*phimosis*, as it is called—when the prepuce is adherent. In a nervous person a redundant, elongated prepuce, covering the gland and pressing upon it, acts as an irritant to the whole system, and excites any number of nervous symptoms, even to melancholia and paralysis.

In such cases a surgical operation is needed; the prepuce must be shortened, and the pressure on the gland penis relieved. This operation, properly performed, is not dangerous, and of itself alone has been known to radically cure cases of nervous disease. In two thirds of my cases of nervous disease connected with the genital functions there is more or less abnormal condition of the prepuce.

In some of these cases there is great sensitiveness of the urethra, so that the passage of a sound causes great pain. This sensitiveness can be overcome by the faithful use of the sound, and by the administration of sedatives and tonics.

Anthrophobia, fear of society, and

Agoraphobia, fear of going out alone, are some of the symptoms of sexual exhaustion, but they may occur also in other forms of nervous exhaustion. For the principles of treatment, see *Nervasthenia*; also *Spermatorrhea*. Local treatment by means of sounds of different sizes, and by urethral suppositories composed of various substances, as bismuth, carbolic acid, and iodoform, is used by physicians for this condition.

SEPTICEMIA.

An acute disease much resembling pyemia. It is caused by the absorption into the blood of the putrid material from a wound or ulcer. It occurs especially after erysipelas, sloughing, and injuries.

Symptoms.—The symptoms are great prostration, collapse, diarrhea, profuse perspiration, nausea and vomiting, drowsiness and delirium. The patient fails slowly, and dies in a day or two. There are no rigors or chills as in pyemia. (See *Pyemia*.)

SEWERAGE. (See *House Drainage*.)

SHINGLES—(*Zoster*—*Herpes Zoster*.) (See Plate XIV.)

This singular disease is characterized by an eruption of groups of vesicles extending in a semicircular manner around one half of the body. It attacks both young and old, and usually runs its course in from ten days to three weeks. The trunk is generally affected, although the eruption may occur upon the forehead and on the extremities. In the majority of cases the group of vesicles are found upon the breast and shoulder-blade, following the direction of the ribs. The eruption ceases abruptly at the median line of the body, and although the popular belief that death would result should it extend around the body is unfounded, the bilateral occurrence of this disease is extremely rare.

Shingles is not a dangerous disease, although it is usually troublesome and frequently very painful.

The eruption begins with a number of pin-head-sized vesicles upon a reddened patch of skin, and is often preceded by a few days of lassitude or fever, with "sticking" pains in the portions of skin where the eruption is about to make its appearance.

During the first few days the vesicles increase in volume to about the size of hemp-seeds, and become distended with clear serum. The clusters of vesicles do not all appear at once, but in succession, so that one patch will have arrived at maturity while others are commencing. Frequently the vesicles coalesce when large, and form blisters of the size of a pea.

The contents of the vesicles gradually become cloudy and yellowish, and the bright red margin of the patches assumes a darker hue. In the course of the second week, the reddened base fades away, the vesicles begin to wither, and groups of thin, blackish scabs finally occupy their site. In old people, neuralgia pains often linger long after the eruption has disappeared.

Treatment.—All that is needful in a mild case is to sprinkle the eruption with starch powder, and prevent rubbing of the clothing by the interposition of a soft linen cloth held in place by tapes or a bandage. When pain is severe, the patch may be painted repeatedly with flexible collodion containing morphia (eight grains to the ounce: .52 gram to 32 grams).

The resulting neuralgia is best treated by means of electricity.

SHIP FEVER. (See Typhoid Fever.)

SHORT-SIGHTEDNESS—(*Myopia*). (See Eye, Diseases of.)



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FEVER BLISTERS (*Herpes*)

From Photographs of Skin Diseases taken from Life under the direction of Geo Henry Fox M.D.

SHINGLES (*Zoster*)

E. B. TREAT, N. Y. PUBLISHER.

J. Massonnet



FEVER BLISTERS (Superficial)

From the collection of the U.S. Army Medical Museum, Washington, D.C.



SHINGLES (Viral)

From the collection of the U.S. Army Medical Museum, Washington, D.C.

U.S. ARMY MEDICAL MUSEUM

SKIN, DISEASES OF.

The skin, like the internal organs of the body, is subject to a variety of affections. These depend upon a variety of causes, a knowledge of which is the basis of successful treatment.

The general belief that eruptions are the result of bad blood is an erroneous one. A vast amount of time and money is wasted in the vain attempt to draw out of the system humors which exist only in the imagination, and Doctor So-and-so's "Blood Purifier" is often taken by the quart for the cure of an eruption which has no more to do with the purity of the blood than have grease-spots on the clothing.

The prevalent idea that skin diseases result from a closing of the pores of the skin is equally incorrect. As a matter of fact, the pores, or sweat-ducts, though performing a highly important, function in health, have very little to do with diseased conditions of the skin.

Another prevalent and erroneous notion is that skin diseases are an evidence of neglect of bathing.

Now, bathing is an admirable practice, both in health and disease, and cannot be too highly commended, but no amount of bathing will prevent some forms of skin diseases; while the subjects of prolonged water-cure treatment frequently suffer from pimples and boils.

In the treatment of skin diseases, bathing is of little use save as a palliative measure, while in some moist eruptions, particularly in children, frequent ablutions may do positive harm.

Many people look upon the possessor of an eruption as being peculiarly unfortunate, and regard him as the Israelites regarded a leper whom the priest had pronounced unclean. This is as absurd as it is unjust, since a sufferer from a skin affection is no more deserving of pity or of reproach than is the victim of dyspepsia or bronchitis. Nevertheless, it is a fact that salt rheum is not generally considered to be as aristocratic as gout, nor as romantic as consumption, and many who delight in talking about their cough or their constipation are careful to keep silent respecting the slightest blotch or pimple affecting their skin.

If, then, skin diseases are not the result of bad blood, closed pores, or neglect of bathing, what is it that causes them? Truly a difficult question to answer in few words. There are, it is true, eruptions which are directly due to the presence in the blood of poisonous matter, but the great majority are the result of an impairment of the general health; of chronic indigestion (of which

the sufferer may be entirely ignorant); of some derangement of the nervous system; of a rheumatic disposition; and, finally, of various forms of local irritation. These eruptions are frequently aggravated by coexisting affections of the kidneys, liver, and womb.

A certain number of skin affections are *parasitic* in their nature, that is, they are due to the presence either of insects which live on or burrow in the skin, or of minute vegetable organisms which grow upon the skin and in the hair-roots, just as mould grows upon a damp wall. Such affections are purely local, more or less contagious, and often attack the strong and robust, when, of course, it would be folly to give internal remedies.

As to the treatment of some of the common forms of skin disease, directions will be found accompanying their descriptions.

Lack of space will only admit a brief mention of other diseases to which the skin is heir.

Acarus Scabiei. (See Itch, page 724.)

Acne, Blackheads, or Pimples. (See page 468.)

Alopecia, or Baldness. (See page 500.)

Animal Parasites. (See Itch, page 724.)

Baker's Itch. (See Itch, page 724.)

Baldness, or Alopecia. (See page 500.)

Barbadoes Leg. (See Elephantiasis, under Skin Diseases.)

Barber's Itch, Mentagra, or Sycosis. (See page 502.)

Birth Mark, or Mother's Mark. (See Wine Mark.)

Blackheads, Acne, or Pimples. (See page 468.)

Chapped Hands. (See page 546.)

Chicken Pox, or Varicella. (See page 544.)

Chilblains. (See page 546.)

Chloasma is a yellowish or brownish discoloration of a limited portion of skin. This depends upon an increase of the normal pigment of the skin, and not unfrequently occurs upon the forehead of women during pregnancy, or in connection with uterine disorders. The term is sometimes applied to the numerous yellowish spots which occur upon the breast, back, and arms, and are of parasitic origin. (See Itch, page 724.)

In true chloasma, a removal of the cause of the trouble should be aimed at.

Locally the following ointment may be applied :

Ammoniated mercury, 2 parts.

Subnitrate of bismuth, 3 parts,

Simple ointment, 5 parts.

Mix well, and apply on a soft rag at night.

Dandruff, or Pityriasis. (See page 580.)

Ecthyma.—This is an eruption of flat pustules about the size of the finger-nail, which dry into thin, hard, blackish scales. They appear upon various portions of the body, particularly the back and lower limbs, in persons who are of a scrofulous disposition, or whose health is broken down by insufficient food and overwork. The presence of lice in the clothing, and irritation of the skin from other causes, is apt to provoke the eruption in predisposed persons. Syphilis often produces ecthymatous pustules with thick crusts and ulcers beneath.

Treatment.—A nutritious diet, with attention to hygienic requirements, is of the greatest importance.

Locally an ointment of the oxide of zinc may be applied morning and night.

Elephantiasis, or Barbadoes Leg.—This is a common disease in certain tropical climates, and is occasionally met with elsewhere. It commonly affects the leg, which may increase in size to an enormous degree and become roughened and hard.

Eczema. (Page 627; see also Scald Head, Milk Crust, Salt Rheum, Tetter.)

Ectozoa. (See page 627.)

Entozoa. (See page 633.)

Erysipelas, St. Anthony's Fire. (See page 638.)

Epithelioma, or Smoker's Cancer. (See page 906.)

Favus. (See Ringworm, page 857.)

Freckles and Sunburn.—These are affections far more disagreeable than dangerous. In the former, a lotion of corrosive sublimate (one grain to the ounce, .06 to 32 grams) will prove of temporary benefit. In the latter, the skin may be anointed with cream or fresh lard.

Fish Skin Disease, or Ichthyosis.—Its development is generally noted in infancy, when the skin is found to be abnormally dry and somewhat scaly. Later the skin of the extremities cracks and forms diamond-shaped scales. Occasionally a patch of skin becomes blackened and warty in appearance. The disease is always worse in winter, and is extremely chronic.

Treatment.—Rubbing of the skin with any oily or fatty substance relieves the discomfort and lessens the disfiguration, but does not cure the disease. Cod-liver oil is a remedy which has been recommended for use “internally, externally, and eternally,” and may be safely employed.

Grocer's Itch. (See Itch, page 724.)

Hives, or Nettle Rash. (See page 790.)

Herpes, or Shingles. (See page 692.)

Ichthyosis. (See Fish Skin Disease, page 894.)

Impetigo, or Porrigo. (See page 709.)

Itch, Baker's Itch, Grocer's Itch, or Scabies. (See page 724.)

Leprosy. (See page 737.)

Liver Spots, Tinea Versicolor. (See page 742.)

Lice, or Lousiness. (See page 737.)

Lupus. (See page 749.)

Measles. (See page 749.)

Mentagra. (See Barber's Itch, page 502.)

Milk Crust. (See Eczema, page 627.)

Moist Tetter. (See Eczema, page 627.)

Molluscum. (See page 770.)

Moles.—These are dark growths in the skin more or less prominent, and sometimes hairy. They can be quickly removed by a very slight surgical operation, involving but little pain and no danger.

Mother's Mark, or Birth Mark. (See Wine Mark.)

Nettle Rash. (See Hives, page 790.)

Parasites. (See Worms, Ectozoa, and Entozoa. (See pages 627 and 633.)

Pediculosis. (See Lice, or Lousiness, page 737.)

Pemphigus. (See page 813.)

Pimples. (See Acne and Blackheads, page 468.)

Pityriasis. (See Dandruff, page 580.)

Porrigo, or Impetigo. (See page 709.)

Prickly Heat.—This is an eruption which is very common in summer, and particularly when the heat is excessive and prolonged. It attacks both young and old, and may affect a large portion of the body. Its predisposing causes are varied. Too much clothing and a lack of bathing favor its development in infancy, while the same causes, together with injudicious diet, overwork, and nervous prostration, act in adult life.

Treatment.—Cream-of-tartar water, made by adding a tea-spoonful of the powder to a glass of water, may be taken in moderate quantity, and by acting on the kidneys will relieve the congestion of the skin. Lemonade should be used in place of ice-water, as a much smaller quantity of it, if taken slowly, will suffice to quench the thirst. The skin must be kept clean and dry. To effect this, frequent bathing is necessary, especially for those who perspire freely. Starch powder, or oxide of zinc and bismuth, equal parts, dusted over the eruption is better than the majority of ointments and lotions.

Pruritus, or Itching.—This depends upon a great variety of causes, both internal and external. The health should be cared for and the diet regulated. An alkaline bath, made by throwing one or two table-spoonfuls of soda or saleratus in a full bath-tub, is often beneficial, and a lotion of carbolic acid (ten drops to the ounce) will always produce a certain amount of relief. In obstinate cases electricity is of great service.

Psoriasis, Salt Rheum, or Eczema. (See page 824.)

Purpura. (See page 840.)

Ringworm, or Favus. (See page 857.)

Rosacea. (See page 860.)

Salt Rheum, Tetter, Eczema, etc. (See page 627.)

St. Anthony's Fire, or Erysipelas. (See page 638.)

Scabies, or Itch. (See page 724.)

Scald Head, or Eczema. (See page 627.)

Scarlet Rash, Rose Rash, Roseola, Rötheln, or German Measles.—These are names given to certain exanthematous diseases which often bear so close a resemblance to measles or scarlet fever that even physicians are puzzled to distinguish them. They run a mild course, and require the best of nursing with little or no medicine.

Shingles, or Herpes. (See page 890.)

Small Pox, or Variola. (See page 897.)

Smoker's Cancer, or Epithelioma. (See page 905.)

Sycosis. (See Barber's Itch, page 502.)

Tetter, or Salt Rheum. (See Eczema, page 627.)

Varicella. (See Chicken Pox, page 544.)

Variola. (See Small Pox, page 897.)

Vegetable Parasites. (See Ringworm, page 857.)

Wine Mark, Birth Mark, or Mother's Mark. (See Wine Mark.)

Worms, or Parasites. (See page 627.)

SLEEPLESSNESS—INSOMNIA—WAKEFULNESS.

This is a very frequent and a very annoying symptom of a large variety of diseases. It is a symptom which, like other nervous symptoms, is increasing in frequency in modern times. It is caused by the same influences that give rise to other nervous disorders. (See Nervous Diseases.) *Overwork of the brain, overworry, inordinate indulgence of the passions,* are among the leading causes that give rise to the state of constitution that finds it difficult or

impossible to sleep. Sleeplessness is a part of the compensation for our progress in civilization. It is, however, entirely possible for one to be through life a hard brain-worker and yet enjoy abundance of sleep. (See Sleep; and Influence of Occupations on Health and Longevity.)

Among the exciting causes of *sleeplessness* are *anxiety* and using the brain too late in the evening. Therefore study, writing, and even reading, attending exciting assemblies, exciting conversation, improper food, excessive physical exercise, and exhaustion of any kind, late in the day, may cause a sleepless night.

Treatment.—1. Correct the general condition. This should be done by obedience to the laws of hygiene, and by adopting every possible measure that will tend to fortify and strengthen the constitution. (For special directions, see Nervous Diseases, Treatment of; and Neurasthenia.)

As a rule, whatever helps the general health will promote sleep, for sleep is a thermometer of health.

If we do not sleep, we may be sure that the system is in some way out of order.

To gain temporary relief.—Take a tepid or warm bath just before retiring. Do not remain in the bath too long. Ten or fifteen minutes will usually be sufficient time. See to it that the water is not *hot*, but simply tepid. Strong constitutions, who are accustomed to the use of water, can bear a cold shower for a moment or two after the warm bath, on the head and neck. This measure is rather heroic, and cannot be indiscriminately recommended. It must be used with great caution by invalids. Sometimes a *hot foot-bath* or a *cold foot-bath* will induce sleep.

Sleep with the head high. Use two or three pillows. Sleepless persons are usually troubled with a rush of blood to the head. This tendency may be somewhat remedied by sleeping with the head considerably raised.

Ice may be applied to the nape of the neck. The ice may be wrapped in a towel or put in a rubber ice-bag, and may be applied from ten minutes to half an hour.

Take large doses of *bromide of potassium*—say dose of from 10 to 40 grains (.66 to 2.59 grams)—just before retiring, and repeat the dose during the night, if necessary. *Bromide of potassium* is, on the whole, our best internal remedy for sleeplessness. It reduces the volume of blood in the brain and calms the nervous system. (See Bromide of Potassium.) There are cases, however, where it does no good whatever.

Such exceptional cases must experiment with other remedies. The best remedy known is opium and its preparations, cold powder (see Cold Powder), Dover's powder (see Dover's Powder), hops of the *hop pillow*, lupulin (see Lupulin).

Some of these remedies—in the regular doses—may be of service after bromide of potassium. Both *cold powder* and *Dover's powder* contain a little opium. A grain of opium or a grain of morphine may be taken, but opiates are apt to leave unpleasant effects. They often cause headache and nausea the following day. When opium is used for sleeplessness, it should be given in as small doses as possible. Sometimes opium aggravates sleeplessness, and all the preparations which contain it must be dispensed with. *Whatever happens, avoid the patent anodynes.*

Alcoholic stimulants sometimes will induce healthful sleep. *Whiskey* or some form of wine may be tried. *Lager beer, ale,* and *porter* act like magic with some constitutions. *Smoking* is a soporific to many. In all these matters the only guide is the experience of each individual. *Hoffman's anodyne* and *valerian* may be tried.

I have known persons who can always be put to sleep by one or two glasses of beer, or by a moderate dose of alcoholic liquor, but on whom chloral fails.

Do not take any of these remedies habitually, but only now and then, when needed.

No one should experiment with himself. Protracted sleeplessness is too often a symptom of *serious trouble* of the brain or nervous system, that may demand the counsel and aid of the physician. Many patients injure themselves by a reckless use of opiates.

Functional disorders, both of the brain and the spinal cord, are often accompanied by wakefulness, or by bad dreams during sleep. It is, perhaps, the most frequent of all the symptoms of the nervous diseases of modern times. When a wakeful night occurs now and then, it needs no treatment; when the habit of wakefulness becomes persistent, it demands attention. (See Neurasthenia.)

Among the remedies for insomnia are the following:

Bromide of potassium, 1 ounce (32 grams),
Hydrate of chloral, 1 drachm (4 grams),
Tincture of cannabis indica, 2 drachms (8 grams). Mix.
Water, 2 ounces (64 grams).

Dose.—One teaspoonful in a tumbler of water.

Tincture of hyosciamus, 1 ounce (32 grams),
Tincture of lupulin, 1 ounce (32 grams).

Dose.—One or two teaspoonfuls.

Oxide of zinc, in doses of from 2 to 6 grains (.13 to .39 gram).

General faradization and central galvanization I have found, on the whole, more efficacious in sleeplessness, both for temporary and permanent effects, than internal medication. (See Electro-Therapeutics.) I have known patients to fall asleep during an application of electricity.

SMALL-POX (*Variola*)—VARIOLOID. (Plate IX.)

Causes.—In every instance it arises from a specific poison, or contagious principle, derived from some one already affected with the disease. It is well known that the infectious effluvia are contained in the air which surrounds the patient; and also that the seeds of the disease adhere to linen, clothes, bedding, and other things, and may lurk in them a long time in full force, until they are extricated by some cause and occasion the complaint.

Although in Georgia, Circassia, Egypt, and India *inoculation* has been practised from time immemorial, in order to mitigate the violence of small-pox, yet in Europe the practice was unknown for centuries; and the disease swept off tens of thousands during every generation, and left thousands more disfigured, crippled, or blind, burdensome to themselves and distressing to the feelings of others. At last Lady Mary Wortley Montague, whilst with her husband during his embassy to Constantinople, witnessed inoculation, and, being convinced of its efficacy, submitted her children to the operation, which fully answered her expectation. In one of her letters, dated April 1, 1717, she says: "The small-pox, so general and so fatal amongst us, is here entirely harmless, by the invention of *engrafting*, which is the term they give it. There is a set of old women who make it their business to perform the operation. Every year thousands undergo it, and the French ambassador observes pleasantly that they take the small-pox here by way of diversion, as they take the waters in other countries. There is no example of any one that has died in it; and you may believe I am well satisfied of the safety of the experiment, since I intend to try it on my dear little son. I am patriot enough to take pains to bring this careful invention into fashion in England." This highly accomplished and spirited lady fulfilled her promise, and introduced the practice into England in 1721; thence it spread rapidly over all Europe, and deprived this loathsome disease in a great measure of its virulence and fatality. Inoculation, however, was attended with many serious disadvantages, and is now therefore entirely

superseded by vaccination, which is in every respect decidedly preferable.

The two principal divisions of small-pox are the *distinct* and *confluent*. In the former the pocks are distinct and separate from each other; in the latter they unite, and the eruption is continuous.

MILD OR DISTINCT SMALL-POX.

The specific contagious principle, or poison, of small-pox remains in a latent state in the system during a longer or shorter period—generally ten or twelve days—and then gives rise to fever.

Symptoms.—The patient is seized with shivering, which is soon followed by thirst, restlessness, and anxiety; he complains of pain in his head, back, and joints; nausea is always experienced, vomiting generally occurs, and pain is felt at the pit of the stomach. Children usually appear sleepy and oppressed, and are sometimes attacked with convulsive fits.

At the expiration of forty-eight hours, or on the third day from the commencement of the shivering, the eruption makes its appearance in small red spots like flea-bites. These are first observed on the forehead, face, and neck, next on the wrists, and, gradually increasing in number and size, extend, in the course of a day or two, over the whole surface of the body; the legs and feet being always the parts last affected. The feverish symptoms abate on the appearance of the eruption; the pulse diminishes in strength and quickness; the pain of the back, headache, and sickness at stomach are greatly relieved; and the patient is not so restless, and the sleep is more refreshing. The numerous red points constituting the eruption are from the first slightly elevated above the skin; on the second day their base becomes enlarged and feels hard to the touch; on the third day, beyond which the eruption seldom continues to be thrown out, a small vesicle or pock, having a central depression, and containing a thin limpid fluid, shows itself on the summit of each pimple. The pocks are now about the size of a small pea, and with an inflamed border of a damask-red color, more or less vivid, according to circumstances. On the sixth day, reckoning from the beginning of the eruption, the central depression disappears, and the fluid, which was at first thin and limpid, is changed to a yellow color, and presents all the appearance as well as consistence of the matter of an abscess. On the following day the pustules on the forehead, face, and parts where the eruption first appeared burst; and on the eighth day, still counting from the date of the eruption, scabbing commences over the whole body;

but on the legs and feet the pustules are slow in reaching maturity and do not, in many cases, begin to decay or discharge their contents until three or four days after scabs have appeared on the face.

The fever, which had in a great measure or altogether subsided on the appearance of the eruption, recommences when the pocks are ripened; the pulse becomes quick, the sleep is much disturbed, the urine is again scanty and high-colored, and sometimes there is delirium at night. This is called the *secondary fever*, in contradistinction to the *primary fever* which preceded the eruption. During three or four days previous to the bursting of the pustules, the face and hands are in most cases considerably swollen, and the eyes are closed up. At this period the skin emits a sickly, disagreeable smell peculiar to the disease; it is tender and more or less painful, accompanied with a distressing sensation of itching throughout the whole period of maturation.

In this form of the disease the secondary fever seldom continues long, the swelling of the face and hands soon subsides, and about the fourteenth or fifteenth day of the eruption the crusts have fallen from the face, neck, and upper parts of the body, leaving the skin of a brown or clarety hue, which sometimes does not disappear for two or three months. In many cases ulceration succeeds the bursting of the pocks, and pits or depressions are the consequences, which continue through life. (See Varioloid.)

Treatment.—Small-pox, like scarlatina and other diseases which result from a specific contagion, must run a certain course and pass through its natural stages before the patient can be restored to health; hence we must not attempt to stifle the development of the symptoms or unnecessarily interfere with the natural progress of the disease, but should confine our treatment to palliative measures, and to preventing or counteracting any untoward accident which may occur during its course. The inflammatory disorders which sometimes arise during the progress of the disease should, on the contrary, be treated by remedies of a more active nature.

In the mild or distinct species of small-pox the inflammation of the skin is always comparatively slight, and that of the mucous membrane of the air-passages is seldom very severe; it should nevertheless be borne in mind that the eruption is not always developed in these structures in an equally mild form. In some instances, although mild and perfectly distinct externally, it may be accompanied with internal affections of a sufficiently serious nature to require the greatest attention and the most careful management.

When, however, the eruptive fever is mild and the inflammation of the skin moderate, we have merely to keep the patient in bed in a cool, well-aired chamber, and watch the progress of the disease.

CONFLUENT SMALL-POX.

The fever which precedes the eruption in this form of the disease is usually very severe; the symptoms enumerated in describing the distinct variety appear in a much more intense degree; the languor and general oppression, the pain in the back and sickness at stomach, are more severely felt; the pulse is quick, contracted, or oppressed; delirium often sets in early, and is sometimes of the lower character described under the head of typhus, or the patient is outrageous, and requires to be controlled.

The eruption is thrown out to a much greater extent than in the distinct kind, and this constitutes the principal feature of confluent small-pox. The vesicles appear early on the third day, and are filled with a thin brownish fluid; they never rise to an eminence, but run into each other, forming large patches or blisters, and sometimes the face is completely covered, as if with a mask. The face and head begin to swell on the third or fourth day, the glands of the mouth become affected about the same time, and copious salivation continues until the ninth or tenth day; this symptom is also not uncommon in distinct small-pox. On the fifth day the eyes are closed up, and the limbs are much swollen. As the disease advances, the glands of the neck become enlarged, while the head and face are hideously swelled and disfigured, and contrast in a striking manner with the healthy and blooming appearance which the countenance presented only a few days before. When the pustules break, large, dark-colored scabs are formed, accompanied with an exceedingly loathsome smell.

There is little or no diminution of the fever on the breaking out of the eruption; the patient continues very restless, the sleep is much disturbed, the skin is hot, and the thirst urgent. With the approach of the disease towards its crisis, the symptoms in many cases become still more alarming; the brain and nervous system are affected as in typhus fever, and a long train of typhoid symptoms are manifested; there is a great prostration of strength; the tongue is dry, tremulous, and protrudes with difficulty; low muttering delirium or a state of stupor comes on; the urine and stools are voided involuntarily; convulsive starting of the tendons, picking at the bed-clothes, and hiccup take place; and the patient dies between the eighth and ninth days of the eruption.

Some patients, however, are fortunate enough to escape all these impending dangers, and the disease reaches the period of decline; but another ordeal, fraught with extreme danger, has still to be gone through. The restorative process has no sooner commenced than a state of general excitement, called *secondary fever*, is lighted up; this occurs in all cases where the inflammation has penetrated to the cellular texture beneath the skin, and is also frequently experienced in children and delicate persons even in the distinct variety of the disease, where the cellular substance is little or not at all implicated. On the ninth or tenth day of the disease, sometimes later, the skin becomes hot and dry, the pustules are hard and scaly, the pulse is increased in frequency, the tongue is white, there is great thirst, and the patient is deprived of sleep. This secondary constitutional disturbance may be complicated with various local disorders; these are sometimes confined to the external parts of the body; in other cases, again, the internal organs are affected.

MALIGNANT SMALL-POX.

In this form of the disease the fluids of the body are in a depraved state, and hemorrhage or discharge of blood takes place from the nose, the gums, the stomach, or bowels; and in females, from the womb. Purple-colored fever-spots make their appearance on all parts of the skin not covered by the eruption. The pocks, as they advance to maturity, instead of being filled with yellow-colored matter (pus), contain a thin bloody-colored serum, and run into each other as in the confluent form above described. There is great prostration of the vital powers, the countenance is haggard, the breathing is hurried and irregular, the urine is dark-colored or bloody, and the patient is affected with low muttering delirium almost from the onset of the disease, although in some instances the intellectual faculties continue unimpaired to the last. This is by far the worst form of small-pox, and almost invariably destroys life between the fifth and eighth days from the commencement of the eruption.

Mild or distinct small-pox seldom proves fatal; but when the disease appears under the confluent form it is much more to be dreaded, and the malignant variety almost invariably proves fatal. The signs which lead us to anticipate a favorable termination are a small and soft pulse, undisturbed sleep, quiet of mind, and a crimson-colored border surrounding the pocks. The unfavorable symptoms are restlessness, sleepless nights, delirium, hoarseness, cough, etc., occurring at an early period of the disease; the appearance of

vesicles on the tongue, or the inside of the mouth and throat; a purple or claret-colored margin surrounding the pocks, a white and pasty appearance of the face, and flatness of the pocks on the body and extremities. Purple-colored fever-spots, and loss of blood from the mucous membrane of any part of the body, announce a fatal termination. Infants and people advanced in life seldom recover from confluent small-pox. The most favorable age for receiving the disease is from the seventh to the fourteenth or fifteenth year.

The great thing in the general treatment of small-pox is good nursing. In spite of all that we can do the disease will run its course. The same remark will apply to nearly all fevers.

During the progress of small-pox the patient may drink freely of lemonade, ice-water, and carbonated water—that is, water impregnated with carbonic-acid gas—or of the effervescing draughts.

The body should be frequently sponged with cool or tepid water.

The sickness at the stomach may be relieved by *oxalate of cerium* in doses of one or two grains (.065 or .13 gram) dry on the tongue; or by *subnitrate of bismuth* in doses of five grains (.32 gram).

When the patient becomes debilitated, it is frequently necessary to use stimulants. Brandy, whiskey, and wine may be employed in such doses as the patient will bear.

If the patient is not much debilitated, it may not be necessary to use any stimulants.

Pure air is important. The sick-room should be *freely ventilated* without *chilling the patient*. This same rule should be observed in the treatment of all fevers.

If the throat is very troublesome, it may be gargled with salt and water, or with chlorate of potash and water—one drachm to an ounce of water (4 to 32 grams).

If the eyes are exceedingly troublesome, they may be treated as directed under diseases of the eye. (See Eye, Diseases of.)

During the progress of small-pox, complications occasionally arise that require special treatment.

One of the most interesting points in the history of the treatment of small-pox, is the various efforts which have been made from time to time to prevent the pustules from coming to maturity, and thus diminish the irritation and other unpleasant consequences that invariably accompany an extensive crop of confluent pustules over a large surface of the skin; for obvious reasons the greatest attention has been paid to the state of the face and neck. The Arabian physicians were in the habit of opening the pustules when com-

pletely formed, and pressing out the matter in order to prevent its absorption; the parts are then washed gently with a rag moistened in tepid milk; this practice may always be followed with advantage. Some physicians endeavor to prevent the formation of pustules altogether by *cauterizing* them on the first or second day with the *nitrate of silver*. This may be done most safely by touching the pustule with a sharp-pointed stick of lunar caustic; the caustic should be applied lightly twice a day, so as not to burn the surface of the skin deeply; in this way the pustules are frequently prevented from coming to maturity.

To prevent pitting, a mucilage of starch is applied to the body, which is first washed with tepid water.

After the pustules have discharged, apply the following:

Glycerine, 1 ounce (32 grams),
Rose-water, 2 ounces (64 grams).

Internally the following is given:

Carbolic acid, $\frac{1}{2}$ drachm (2 grams),
Acetic acid, $\frac{1}{2}$ drachm (2 grams),
Laudanum, 1 drachm (4 grams),
Chloroform, 1 drachm (4 grams),
Water, 8 ounces (256 grams).

DOSE.—One table-spoonful every four hours.

Another method of treating the pustules is the application of collodion. (See Collodion.) This should be applied once or twice a day with a brush. This method is rather agreeable to the patient than otherwise.

Another method consists in covering the face, or such parts of the body as we wish to preserve from scars, with a mask of mild mercurial plaster. The plaster must be applied as soon as the pustules make their appearance, and be kept on for four or five days without intermission. This method is not attended with any danger, and may be safely intrusted in the hands of persons who have not received a medical education.

Persons laboring under confluent small-pox, especially towards the end of the disorder, require constant care and attention. When the whole body is covered with pustules which emit fetid pus in greater or less quantity, the surface should frequently be sprinkled with starch-powder; the linen must be frequently changed, and every attention paid to cleanliness. Sores of an evil nature are about this time apt to form on the buttocks, or other parts of the



SMOKER'S CANCER *Epithelioma*

From Photographs of Skin Diseases taken from Life under the direction of Geo. Henry Fox, M.D.

E.B. TREAT, N.Y. PUBLISHER.

LEPROSY *Elephantiasis Gracorum*



body exposed to pressure; these sores must be carefully looked for, and undue pressure prevented by placing pillows under the back, legs, etc.; the sores may be dressed with a decoction of cinchona bark, and the patient's strength supported by wine, nourishing broths, and cordial draughts. The following is a good form:

Compound infusion of orange-peel, 12 ounces (384 grams),
Aromatic confection, 6 scruples (7.5 grams),
Sulphate of quinine, 1 scruple (1.25 gram).

Two ounces (64 grams) to be taken every four hours.

SMOKER'S CANCER—(*Epithelioma*).

This is one of the most superficial and least malignant forms of cancer. Its favorite seat is the face, and particularly the lower lip. (See Plate VII.) Here it may appear as a small warty growth or mere scab, which gradually develops year by year into a firm, unyielding lump, or a deep ulcer, with ragged, indurated, and everted margins. It frequently attacks the lip or tongue of old smokers, and those especially who have used a short pipe, but it may also attack women and men who have never smoked. Tobacco can only cause the disease in those already predisposed to it.

Treatment.—The growth must be removed, and the earlier the better; for although the growth often remains small and harmless for a score of years, it may, on the other hand, increase rapidly and occasion great destruction of tissue. The advice of an experienced physician should be sought at the outset, and no faith placed in the advertised cures of mendacious "cancer doctors."

SNAKES, BITES OF. (See Poisonous Wounds).

SORES OR ULCERS. (See Ulcers).

SPASMS OR CONVULSIONS. (See Convulsions).

SPASM—FACIAL SPASM—MIMETIC SPASM.

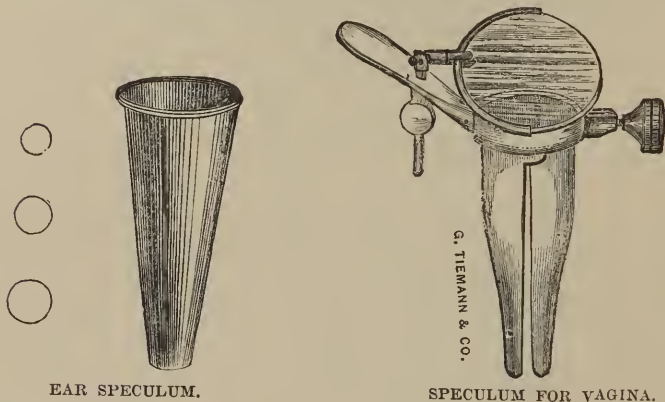
When any of the muscles of the face are affected with movements, the disease is called Facial Spasm or Mimetic Spasm. This disease when recent and mild is readily cured. When chronic it is very obstinate.

The treatment consists in the application of electricity, injections hypodermically of various powerful drugs, as arsenic and conium.

One case has been recently cured in Germany by cutting down to the nerve and thoroughly stretching it. Neuralgia has been treated successfully in the same way.

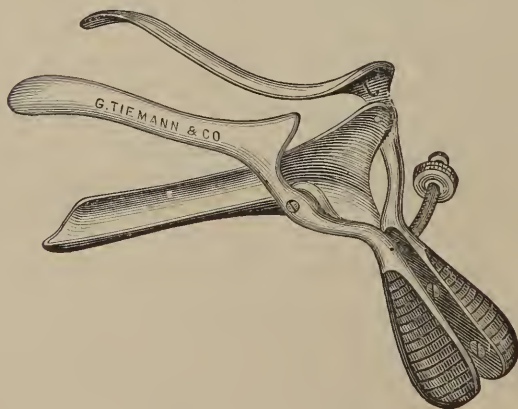
SPECULA.

Specula are contrivances for examining the cavities of the body



EAR SPECULUM.

SPECULUM FOR VAGINA.



SPECULUM FOR VAGINA.

that are not directly open to the inspection of the eye. They are of various shapes and composed of different substances, according to the part that they are designed to aid us in examining.

Specula for the ear separate the walls of the external auditory canal, and admit reflected light from a mirror against the drum of the ear, and enable us to study it with accuracy. (See Otoscope.)

Specula for the vagina separate the vaginal walls and bring into distinct view the neck of the womb, and reveal any disease that

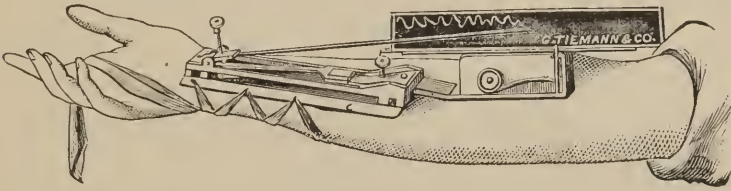
may exist there. Of these specula for the vagina there are a large variety. (See Women, Diseases of.)

These specula are not designed for domestic use, but their introduction into medical practice has revolutionized the treatment of the diseases of the parts and organs which they aid us to examine.

SPHYGMOGRAPH.

This is a contrivance for recording the character of the *pulse*. It is of material assistance in the study of the pulse in various morbid conditions. It is a somewhat complicated apparatus, and has not yet come into general use in the profession.

A general idea of this apparatus may be derived from the cut.



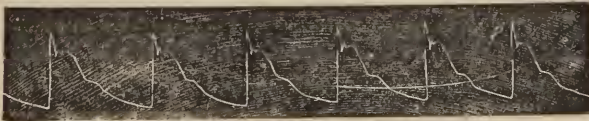
SPHYGMOGRAPH.

It represents the sphygmograph applied to the fore-arm. It is kept in its position by a bandage passed round the wrist. The plate rests on the artery. Each pulsation of the artery slightly

PLATE I. SOFT PULSES.



Undulatory pulse of typhus.
(Frequency, 160.)



Hard pulse of chronic Bright's disease (contracted kidney).
(Frequency, 70.)



The firm and long pulse of vigorous health.
(Frequency, 50.)

moves the plate, and a clockwork attachment moves a frame at the

rate of three inches to a tenth of a minute. At the end of the lever is a pen of a peculiar shape, which writes on a piece of glazed paper as the frame moves.

A similar clockwork attachment is connected with the dynamometer. (See Dynamometer.)

That the pulse varies in disease and in health with the nature of the constitution and the condition of the system, everybody knows. The advantage of this apparatus is that it *definitely records the character of the pulse*.

The accompanying cuts represent the firm and long pulse of vigorous health, and the hard pulse of chronic Bright's disease.

Inflammations of the heart, enlargement of the heart, typhus fever, and irritative fever, all have their characteristic pulse, that may be distinctly recorded by this ingenious contrivance.

SPINAL CONGESTION—SPINAL HYPEREMIA.

Congestion of the spinal cord, or of its membranes, may be caused by taking cold, by injury, or by over-exertion.

It is possible to take cold in the cord, just as it is possible to take cold in the lungs or nasal passages.

Symptoms.—The symptoms of spinal congestion are pain in the back, a feeling of numbness in the legs or arms, or both, heaviness of the limbs, queer sensations at the bottom of the feet, and sometimes difficulty in urinating.

Treatment.—The treatment consists in the free use of ergot, a teaspoonful of the fluid extract four times a day. The ergot may be combined with one or two drops of the tincture of belladonna.

Galvanization of the spine is also good treatment; also dry cupping.

The patient for a few days should rest in bed. Spinal congestion unrelieved may lead to severe disease of the cord, such as ataxy and atrophy.

SPINAL MENINGITIS. (See Spinal Congestion; also Cerebro-Spinal Fever.)

SPINE, DISEASES OF.

The word spine is a very indefinite word. It is applied to the

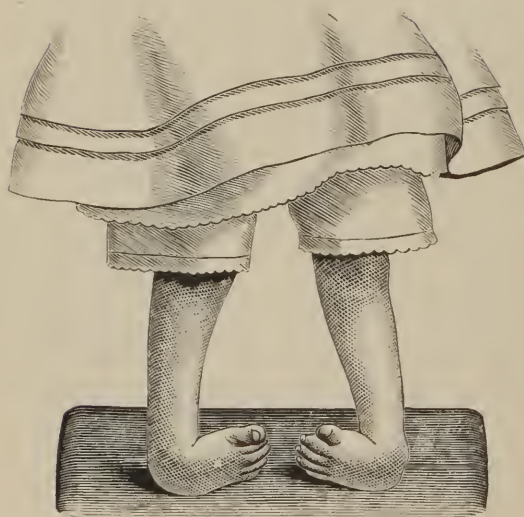
Plate 19.



LATERAL CURVATURE OF THE SPINE.
(*Scoliosis.*)



HUNCHBACK—POTT'S DISEASE.
(*Kyphosis.*)



CLUB FOOT.—(*Varus.*)



CLUB FOOT.
(*Equinus.*)

DEFORMITIES OF THE SPINE AND FEET.

From Photographs of Life Cases in the N. Y. Orthopedic Dispensary and Hospital.
Secured and Engraved expressly for "The New Cyclopedia of Family
Medicine."

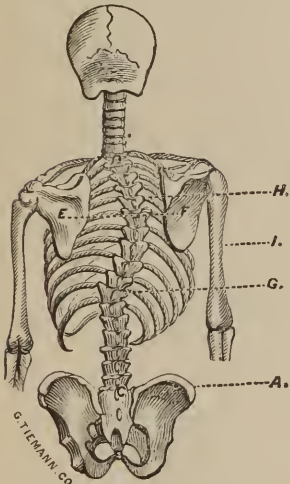
spinal cord, to the *spinal column*, to the *nerves that issue* from the cord, and to the *muscles* of the back.

Pain in the back may come from one or all of these causes. It is an interesting fact that where there is serious organic disease there is usually *very little pain in the back*.

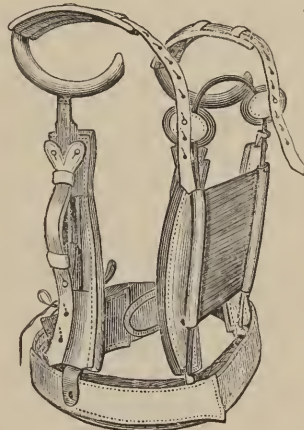
Pain in the back is usually, though not always, the symptom and result of nervous exhaustion. Therefore dyspeptics, hypochondriacs, etc., frequently complain of uneasiness and distress in the small of the back. (See Backache.)

Pain in the back, from whatever cause it may arise, may be relieved by the following measures :

1. Plasters of belladonna, or of some other anodyne.



CURVATURE OF THE SPINE.



SPINE BRACE.

2. *Spongio-piline*, well moistened, applied directly over the aching part, and kept there by firm pressure of a band or bandage, or of the clothing. (See Spongio-piline.)

These backaches arise from nervous exhaustion and from diseases of the genital organs, and are only to be cured by curing the causes. Where we are unable to cure the causes we can at least *relieve* the distress and annoyance of backache by the measures that I have recommended.

When the pain in the back, from any cause, is exceedingly severe, it may be necessary to resort to hypodermic injections of morphine or atropine. (See Hypodermic Injections.)

When we have reason to suspect the existence or approach of real organic disease of the bones of the spine, we should consult some reliable surgeon, accept his opinion, and obey his advice.

Parents should watch their children when they think that they see evidence of spinal disease, and have them taken in time.

There are many cripples in the land who might have been well to-day if their parents had early acted upon the suggestion here offered.

CURVATURES OF THE SPINE.

The spine curves from a variety of causes. *Disease of the bone* may produce curvature. Weakness of the muscles of the back may also bring on the same result. There are three kinds of curvature—*backward, forward, and lateral.*

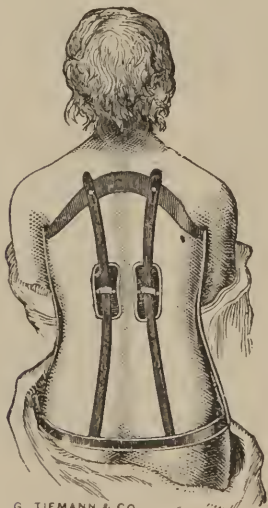
Of late years great improvements have been made in the treatment of spinal curvatures by means of mechanical appliances.

There is no reason why parents should necessarily be discouraged when they find out the unwelcome fact that a child has a curved spine. Even if the curvature results from disease of the bones (the so-called *Pott's disease*), it may be entirely or approximately cured.

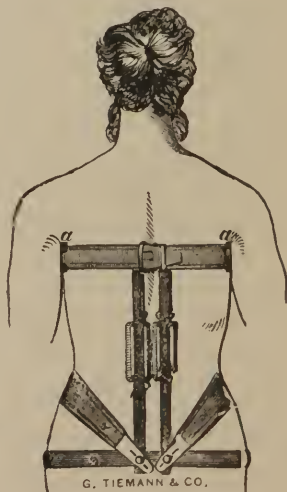
The mechanical appliances that are used must be adapted to each case. To give any rules or special suggestions for the use of these appliances would be impossible.

PREVENTION OF DISEASES OF THE SPINE.

Every one can do something towards preventing diseases of the spine, even if they can do but little to cure them after they are fully upon us.



G. TIEMANN & CO.
TAYLOR'S SPINE BRACE.



G. TIEMANN & CO.
DAVIS' SPINE BRACE.

We can prevent these diseases by obedience to the laws of health; by allowing our children plenty of air, sunlight, good

food ; by giving them comfortable chairs in our schools and homes ; and by taking in time all the beginnings of evil.

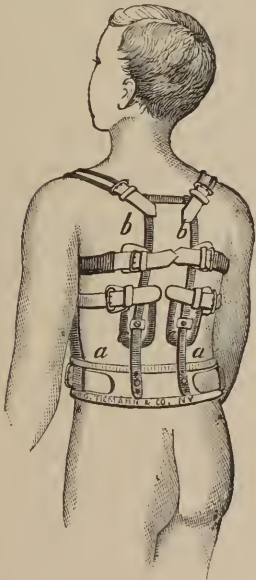
DISEASES OF THE SPINAL CORD.

Congestions, inflammations, and other affections of the spinal cord, like all other diseases of the nervous system, are increasing in frequency.

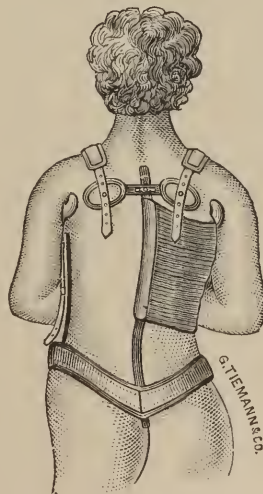
Both the brain and the spinal cord are very much at fault in a large number of the chronic diseases of our time.

From Dr. Chas. F. Taylor's suggestive treatise on the diagnosis of diseases of the spine I quote the following passage :

"The peculiarity in the patient's attitude is unmistakable. He does not always lean to one side or the other, though frequently doing so ; but there is an expression intimated and easily detected ; an effort to get as many springs under him as possible ; a letting down of each joint of the body, so as to avoid shock. This is instinctive, and the patient is unconscious of it. He takes a peculiar crouched position, and sometimes is disinclined to sit at all ; for in sitting he would be folded together, and the pressure upon the



TIEMANN'S SPINE BRACE.



WASHBURN'S SPINE BRACE.

bodies of the vertebræ would be increased. When the child comes to his mother's lap he will fall heavily upon it, and wish to bear his whole weight upon his elbows. These symptoms are more notice-

able in the severer cases, which will serve as types by which to judge of slighter indications of the same character.

"I have often alluded to the fact that in Pott's disease there never is sensitiveness along the spinal column. Out of three hundred and eighty-two record cases, attended during the last three years, I have never found one case with spinal hyperesthesia.

"Feeling along the back for tenderness must therefore be abandoned as a means of diagnosis in these cases. Percussion over the supposed seat of the disease is equally worthless as a means of diagnosis. Too many cases are allowed to run on until past cure, by trusting to a symptom which does not exist.

"Another symptom which may occur in the first stages of Pott's disease is paralysis. It may appear very early, even before any deformity can be noticed. It is not difficult to distinguish this form of paralysis from that due to other causes. In such a case we fall back at once upon the rational symptoms. Inquire into the state of the child's health for the last six or eight months, and we generally find that he suffered some injury a few weeks before the date of the earliest symptoms, which will always resemble more or less closely those previously described. Paralysis arising from spinal disease in the early stages is apt to be brief. The child is put to bed, gets rest, and his paralysis passes off in a few days. The paralysis is apt to be more protracted, lasting one or two years, when occurring in the later stages of the disease.

"If you find a child with some dragging of the foot in walking, it should at once call your attention to the spine; and generally when the attention is once directed there, if the paralysis is caused by disease of the vertebræ, it will be possible to discover some slight deviation in the contour of the back. There will probably be no decided projection, but only a slight deviation from the normal curve—the lumbar vertebræ being perhaps less curved forward, or the dorsal more curved backward than normal."

Dr. H. G. Davis says of the relation of the general health to spinal curvature :

"The general health begins to fail gradually, and the effort to maintain the erect position during walking and sitting becomes more tiresome; derangement of the stomach is apt to supervene with constipation of the bowels. Pains occur in the side and back. In the female, dysmenorrhœa is often present, and the countenance is pale, careworn, and exhibits a chlorotic appearance.

"In many slight cases of lateral curvature, the health suffers little or nothing; the local symptoms may be principally those of which the patient complains—as pain in the right shoulder, fatigue

on making slight exertion, interference with the respiration ; after a while, as the distortion increases, with altered size of the thorax ; palpitation of the heart from the same cause, as well as from its mechanical displacement and compression ; disorders of the digestive and other organs, both primarily produced by the deformity, and secondarily through failure of the general health and strength.

“ One symptom may be particularly mentioned, namely, a constant pain in the left side in cases which have progressed, the pain which is difficult to relieve, being referred to the left side, just below the ribs.”

SPITTING OF BLOOD, OR HEMORRHAGE FROM THE LUNGS.

This disorder may come on suddenly, when the patient least expects it ; but in general it is preceded by symptoms of congestion of the lungs. A sensation of tightness, heat, and itching is felt throughout the chest, or at some particular part of it, accompanied with difficulty of breathing and a feeling of anxiety. The pulse may be felt jerking or vibrating under the finger ; the patient experiences frequent chills, alternating with flushes of heat ; his extremities are cold, and he feels languid. When the blood has escaped from the vessels, and is thrown loose into the air-passages, a sense of ebullition or bubbling is felt in the chest, arising from the air coming in contact with the blood during the alternate movements of inspiration and expiration ; at the same time there is often a saltish taste in the mouth, and the difficulty of breathing is increased. At length the irritation in the air-passages produces cough, which is followed by expectoration of a greater or less quantity of blood. Sometimes the titillation excited in the windpipe and throat causes the contents of the stomach to be thrown up, and, as these are mingled with blood, we might at first suppose that the hemorrhage has proceeded from the stomach. But in most cases the red vermilion color and frothy appearance of the blood, and the previous symptoms of internal disease, are sufficient indications that the lungs are the source of the hemorrhage. The extent of the discharge varies greatly. Many cases are on record where persons have ejected considerable quantities of blood from the lungs, periodically, for years, and yet have ultimately recovered ; but in persons of a scrofulous or tuberculous constitution the slightest expectoration of blood is a symptom of fearful omen.

Women are more subject to spitting of blood than men, owing in a great measure to the facility with which the menstrual flux is obstructed from various causes. When that important function is suppressed, or ceases to be performed, the superabundant blood sometimes seeks its way out of the body through other channels; occasionally it escapes from the blood-vessels of the lungs into the air-passages, and is coughed up without causing pain or much inconvenience. This may continue periodically for a considerable length of time, perhaps for years; and at last ceases when the natural function of the womb is restored. Many women, otherwise in good health, are affected with periodical spitting of blood every time they become pregnant; but in all cases of this description the discharge, even when profuse, is not to be viewed in so serious a light as when it occurs under other circumstances. Another fruitful source of this disorder in girls is the bad habit of wearing tight stays. When the chest is strongly girt with stays the natural movements of respiration are impeded, and the blood is retarded in its passage through the lungs; the obstruction thus produced acts in the same manner as malformation of the chest, organic diseases of the heart, or any other circumstances, which, by mechanically interrupting the balance of the circulation, may cause the blood to stagnate in the lungs until, as not unfrequently happens, it is forced out of the vessels into the bronchial tubes or air-passages, and discharged by the mouth. Spitting of blood is not the only evil which this artificial system of restraint induces: the free expansion of the lungs being impeded, the breathing is rendered shorter and quicker than natural, and the air not being admitted in due quantity, the blood is not sufficiently oxygenized, and the whole organization of the body suffers in consequence. The healthy temperature cannot be kept up, the countenance is pale, the feet are often cold, and there is a degree of listlessness and depression which unfits the body for the requisite exercise of its physical powers. This imperfectly vitalized state of the blood prevents the process of nutrition from being adequately accomplished; hence every part of the animal economy is reduced below the standard of healthful vigor, and if any dormant predisposition to consumption be present, nothing will more certainly rouse it into action than this depressed condition of the vital powers,—a condition which but too frequently brings on this fatal malady where no hereditary disposition exists, and in all cases increases the susceptibility to the impression of other diseases.

Causes.—The exciting causes of this disorder are numerous. It may arise from any violent bodily exertion, as running, rowing, or

wrestling; from sudden changes of temper, or from sudden exposure to cold when the body is overheated; and it may be brought on by any circumstances which debilitate the body or render the circulation irregular. Fatal hemorrhage from the lungs has occurred in some instances from distress of mind.

All blood that comes from the mouth does not necessarily come from the lungs. It may come from the throat, the windpipe, the bronchial tubes, the mouth, or the stomach.

Bleeding from the mouth occurs in *scurvy*, from ulceration or weakness of the gums, or from extraction of teeth. When it proceeds from *scurvy*, it should be treated by mild *astringent washes of tannin or alum* (five grains to one ounce of water; .33 gram to 32 grams). When it follows the removal of a tooth, the cavity may be plugged by lint or cotton dipped in Monsel's salt. (See Monsel's Salt, or Creasote, or Carbolic Acid.)

The great point is to distinguish between the blood that comes from the lungs and that which comes from the stomach.

The differences are these:

FROM THE LUNGS.	FROM THE STOMACH.
Blood coughed up, red and frothy, and mixed with spittle.	Blood vomited, dark color and not frothy, and mixed with food.
Difficulty of breathing.	Sickness at the stomach.

Bleeding from the throat and windpipe is not usually of a serious character.

Treatment.—1. *Absolute rest* in a horizontal position.

Rest is the principal thing, and should be chiefly insisted on. The friends of patients are frequently more alarmed than is necessary, and desire to pour down a large quantity of medicine. In many cases no medicine at all is needed.

2. *Common salt* in doses of one or two teaspoonfuls dissolved in water. This is a popular remedy, and is very serviceable.

3. *Fluid extract of ergot* in doses of one, two, or three teaspoonfuls.

Ice and alum may be held in the mouth and slowly swallowed.

The *tincture of the chloride of iron* may, in bad cases, be given in doses of ten or fifteen drops (.5 or .75 gram) in water. Usually, however, *rest, ergot, common salt, ice, and alum* are all that are necessary.

The diet should be mild and unirritating.

These are the means to be adopted during the attack; the sub-

sequent treatment must depend on the nature of the disease which has given rise to the hemorrhage; for, as has been already mentioned, this affection is much more frequently symptomatic of disease of the lungs, heart, etc., than a disease in itself.

We mentioned at the commencement of this subject that spitting of blood may arise from obstruction of the menses, and that when we succeed in restoring this important function the hemorrhage from the lungs does not recur. It must, however, be kept in recollection that spitting of blood rarely occurs from this cause, although for the most part it attacks young women whose menses have been for some time obstructed; and it has been well ascertained that under such circumstances both these affections, in the great majority of cases, result from tubercles in the lungs, as we have had already occasion to notice in another part of this volume. (See Pulmonary Consumption.) It is therefore preferable to wait until the advice of a physician can be obtained, rather than to administer stimulating remedies with the intention of bringing back the menstrual discharge. In certain cases severe hemorrhage from the lungs occurs in females at the turn of life, when the menstrual discharge is about to cease altogether. The symptoms of this form are often very alarming, but the loss of blood is usually restrained by an assiduous use of the means just pointed out.

SPONGIO-PILINE.

This is a combination of *sponge*, rubber, and wool, and has been found very serviceable as a kind of extemporaneous poultice, and also a substitute for the "compress" of the water cure. It is made of rubber, lined with sponge and wool to the thickness of about a quarter of an inch. It comes in large rolls, and is sold by the square inch or square foot. If it were not so expensive it would be much more used than it is now.

In order to use this spongio-piline for a poultice, simply wet it with warm or cold water, as may be desired, or with some medicated solution, and apply it directly to the parts, the sponge lining being inside. The rubber covering acts like oiled silk, and retains the moisture. When much used, the spongio-piline will need to be frequently washed. The spongio-piline may be applied in the same way to the pit of the stomach in dyspepsia, over the bowels, over the ovaries, to sprained joints, in rheumatism, and so forth. It keeps up a mild and pleasant counter-irritation.

SPOTTED FEVER—CEREBRO-SPINAL FEVER—
CEREBRO-SPINAL MENINGITIS.

This disease has only recently become known. It was heard of in Europe in the thirteenth and fourteenth centuries. It appeared in the United States in 1806. Since 1848, several epidemics of it have occurred in various parts of the country.

It is a dreadful disease. *The majority of the cases die*, and usually within three days.

Symptoms.—The attacks usually come on suddenly. The symptoms are *severe pain in the head, chills, nausea, vomiting*. Then comes delirium, perhaps convulsions, sometimes deafness or blindness. Stupor may occur, or exceeding sensitiveness over the body.

The pulse at first is slow, but is afterwards more rapid. The temperature of the body is higher than normal.

Spots occur in the majority of cases on the neck, breast, and limbs, rarely on the face. These spots vary in size. Some of them are three-fourths of an inch in diameter. They do not disappear on pressure.

The head may be drawn backward and the body curved backward.

In glancing over these symptoms, it will be seen that many of them are similar to those which announce many other fevers. It is therefore impossible to tell at first what kind of a fever the patient is to have. *Any one who is taken down with these general symptoms of fever should secure at once the best possible medical advice.* If they are so situated that they cannot obtain medical assistance, all that they can do is to treat themselves, or allow their friends to treat them, on general principles, and without making any attempt to find out at once what kind of fever is coming on, or what its name may be.

These remarks have a general application, and do not alone concern spotted fever. If there is an epidemic about us of small-pox, or spotted fever, or typhus fever, then, of course, we have reason to suspect that the fever that attacks us is the one which prevails.

Treatment.—No treatment seems to be of much service. The profession are yet in the dark on the subject. We may give quinine, and brandy, and opium, and whiskey; we may rub the

body with hot cloths; we may apply blisters and dry cups; and after all the patient will probably die.

Ergotine, 20 grains (1.33 gram),
Extract of belladonna, 1 grain (.06 gram).

Make ten pills. Take one every three hours.

After death there is usually found more or less change in the *brain* and *spinal cord*. Therefore the disease is sometimes called *cerebro-spinal fever*.

SPRAINS—STRAINS.

When a joint is twisted or strained in a direction contrary to its natural range of motion, or is moved to too great an extent in a natural direction, the injury done to the part is called a sprain. In all cases the ligaments and tendons are stretched, and the soft parts about the joint are more or less injured. The pain which immediately follows the accident is always very acute, and greatly increased by the slightest motion of the joint; sometimes it is accompanied by sickness at stomach and faintness. The parts soon become swollen, and in many cases there is considerable discoloration occasioned by the bursting of numerous small vessels, and the consequent effusion of blood into the cellular or fatty substance beneath the skin. In severe cases, the ligaments are partially torn, and the muscles of the limb are injured. Sprains are always very troublesome injuries; and often, especially in elderly persons, require a longer time before the cure is completed than a broken bone or a dislocation. In persons of scrofulous constitutions, a sprain frequently becomes a very serious and tedious disorder, and, when neglected or improperly treated, sometimes gives rise to the disease of the joints called white swelling. The parts most liable to this accident are the ankles, wrists, and joints of the thumbs and fingers; the ankle is most frequently affected, particularly at the outside of the joint. A fall, making a false step as it is usually called, and leaping, are the ordinary causes. A sprain at the wrist, or at the thumbs or fingers, commonly arises from falling upon the hand.

Treatment.—The *first* object in the treatment of sprains is to prevent or subdue inflammation; and for this purpose the most essential of the measures to be adopted consists in keeping the joint perfectly at rest, the limb being elevated higher than the rest of the body, in order to diminish the flow of blood to the part. When

the ankle is sprained, the limb should be placed upon a pillow covered with a piece of glazed cloth; and the parts are then to be kept constantly wet with any simple cold lotion, as *Goulard water*, or vinegar and water. But cold applications are not to be employed if the patient be troubled with cough, or disposed to inflammatory disorders of the lungs; and females are, no doubt, aware that they would be improper during menstruation. Many surgeons, instead of applying cold lotions to sprained or bruised parts, prefer the practice of fomenting them with warm water, or *decoction of poppy-heads*. On this point the patient must judge for himself. If cold applications do not produce the effect of soothing the pain and abating the inflammation, it will then be proper to have recourse to warm emollient fomentations.

In severe cases it may be necessary to apply twelve or fifteen leeches round the joint, and afterwards warm emollient fomentations and poultices; cooling saline purgatives are to be taken, and the patient ought to confine himself to low diet until the inflammatory action is entirely subdued.

The *second* object is to restore the proper tone of the vessels, and to brace the weakened parts, in order to allow the joint to perform its natural functions. But no measures are to be had recourse to with this purpose until we have succeeded, by keeping the joint perfectly quiet, and by the means above directed, in subduing the inflammation. It will then be necessary to *pump cold water on the joint*, and employ friction with *opodeldoe* or some other stimulating application. The treatment is to be conducted on the same principle as that of bruises. There is no better method of keeping down the swelling, of supporting the parts, and restoring their tone, than pressure by means of a laced stocking, or the application of a flannel roller. Some practitioners apply strips of adhesive plaster in opposite directions round the joint, and this, when properly managed, is perhaps the best plan of employing pressure.

We repeat, that the most essential part of the treatment consists in *keeping the joint at rest*. Without attention to this, no remedies are likely to be of much service. Recovery is often retarded by premature attempts at using the limb; by this imprudence the inflammation in many instances is renewed, and becomes chronic, the bones at the joint become diseased, and amputation is the consequence. One of the best methods of treating sprains is by electrization. (See *Electro-Therapeutics*.) This treatment may be used at almost any stage of the injury. In my hands it has frequently been very efficacious indeed.

STAMMERING AND STUTTERING.

According to Hunt, "Stammering is characterized by an inability or difficulty of properly enunciating some or many of the elementary speech sounds, either when they occur at the beginning or the middle of a word, accompanied or not, as the case may be, by a slow, hesitating, more or less indistinct delivery, but *unattended with frequent repetitions* of the initial sounds, and consequent convulsive efforts to surmount the difficulty.

"Stuttering, on the other hand, is a vicious utterance, manifested by *frequent repetitions* of initial or other elementary sounds, and always more or less attended with muscular contortions."

The *causes* of stammering and stuttering are various. It may be caused by *cleft palate, hare-lip, elongated uvula, enlarged tonsils, diseases of the tongue and bad position of the teeth, disease of the brain and spinal cord.*

It may be what is called a purely nervous affection, not connected with any organic condition whatever. It may result from nervous exhaustion. Poisons in the blood, loss of blood, stimulants and narcotics, old age, imperfect development, deficiency of brain, and consequent lack of will, all may be the causes of this disease.

Treatment.—Each case should be treated by itself by some one who thoroughly understands the art. The treatment consists mainly in *training the patient to control his speech* by appropriate discipline.

Mr. Hunt says that on the average it takes at least twenty weeks to perform a cure. He believes that under practice and persevering treatment the disease is much more relievable than is commonly believed. Relapses sometimes occur.

Some cases may be cured in a very short time. A good method is for the sufferer to make some voluntary movement of other muscles, as of the hand or leg—every time he attempts to speak. Thus he diverts the mind from his speaking, and allows the process to go on of itself, which is the natural method. If he constantly thinks of himself and of his speaking he cannot get well.

Stammering seems to be analogous to *St. Vitus's dance* and *writer's cramp*. Its nature is mysterious, and its cure, though a matter of difficulty, is frequently possible.

On the statistics of stammering, Hunt has the following interesting remarks :

"Colombat assumed that there were in France about 6000 persons laboring under defective articulation, or nearly 1 in 5000.

There can be no doubt that the actual proportion is much greater. Colombat himself admits that he included in his estimation such only whose impediments were strongly marked. In Prussia, which in 1830 contained a population of about 13,000,000, the number ascertained from official returns of many places was calculated to amount to more than 26,000 cases for the whole kingdom. According to this calculation, taking the population of the globe to amount to about 1,000,000,000, the number of stutterers and stammerers would form an army of 2,000,000, of which London alone would possess nearly 6,000. It would be very desirable if the Registrar-General would employ the means at his disposal to ascertain the actual number of persons laboring under various impediments of speech in Great Britain, which, I have little doubt, would be found to approach the proportion of 3 in 1000. It is unquestionable that impediments of speech are far less frequent in females than in men. Itard declares he never met with a female stutterer, although he does not deny that such exist. According to Colombat, one woman only in 20,000 stutters; while the proportion according to the *same authority in men is 1 in 5000.*"

STAPHYLOMA.

Unnatural protrusion of the coverings of the eyeballs. Both the cornea and the sclerotic may be affected.

STARVATION—INANITION.

Starvation is very properly included among the diseases. Among the poorer classes the disease is much more frequent than may be readily believed. Starvation is not necessarily a speedy process. It may be exceedingly gradual. *The quantity of nutriment received by the system may be constantly less than it should be, and yet sufficient to sustain life "at a poor dying rate" for years.* There is no question that, among the poorer classes especially, thousands of children and even adults are slowly starved to death every year. The same is true even of many who have abundant means. Erroneous ideas on hygiene have induced many to slowly starve themselves by a rigid diet. The horrible teachings of Alcott, Graham, and President Hitchcock have injured many of the best minds of the land.

Starvation may also result from cancer of the stomach, that renders it impossible to digest food.

Among the symptoms of starvation are an irresistible tendency to fall asleep, feeble circulation, a constant feeling of languor, difficulty of breathing, palpitation of the heart, emaciation, and a down-cast, wearied cast of countenance.

Starvation may bring on other diseases. It may bring on typhoid fever, rickets, scrofula, consumption, scurvy. The so-called fasting girls, like Mollie Fancher, of Brooklyn, profess to live for months or years without eating. Such cases never allow a scientific investigation of their claims.

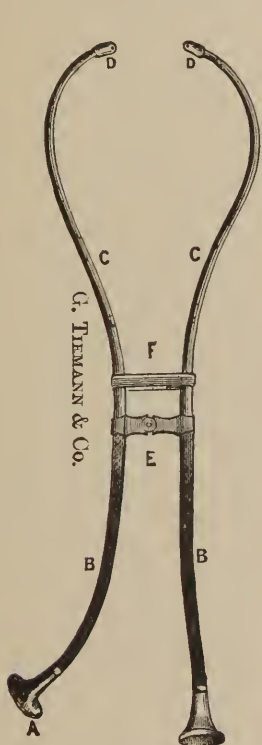
Starvation is to be treated by *nourishing food, tonics, and stimulants*. After prolonged abstinence the food should be of a mild and easily digested character, and should be given very gradually and in very small quantities. It may be necessary in some cases to inject beef-tea into the rectum, instead of giving it by the mouth. Stimulants and tonics should also be given at first with great caution.

“The effects of continued insufficient alimentation have been graphically described by De Meersman, as observed in Belgium during the famine years of 1846–47 (quoted by Longet in his ‘*Traité de Physiologie*,’ t. i.). The extreme emaciation of the body, pallid face, and sunken cheeks; the bright eye and dilated pupil; haggard, bewildered look; the weak, tremulous voice, the feeble memory, infirm mind; the slow, uncertain, tottering gait; dry, yellow, parchment-like, and fetid skin; stinking breath; shrunken belly; slow, sighing respiration; small, frequent, and gaseous pulse, are all described with sickening fidelity. But the largest field for the observation of the consequences of gradual continuous starvation was afforded by the Andersonville military prison towards the end of the late war, where thirty thousand men were exposed, within an area of twenty-seven acres, without shelter, and with food insufficient in quantity and quality, to the weather, with all the ills of overcrowding, and were literally, slowly, and surely starved to death. The report of Professor Joseph Jones, of Nashville, Tenn., made to the Surgeon-General of the Confederate army, on the condition of the prisoners of war, has been well called ‘the most complete scientific history of inanition ever written, deduced from data which are, and probably always will be, unparalleled in magnitude.’ This, in a medical point of view, invaluable and instructive report is published at length in the ‘*Medical Memoirs of the U. S. Sanitary Commission*.’”

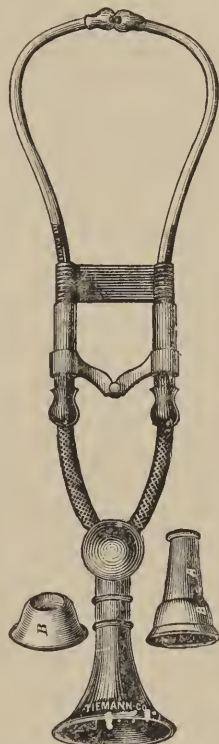
STERILITY—BARRENNESS. (See Women, Diseases of.)

STETHOSCOPE.

Stethoscopes are tubes of various shapes, employed in sounding the chest. (See Auscultation.) The physician presses one end of the stethoscope firmly over that part of the chest which he wishes



ALLISON'S DIFFERENTIAL STETHOSCOPE.



CAMANN'S STETHOSCOPE.

to examine, and applies his ear to the other end. Many physicians use no stethoscope at all, but apply the ear directly against the walls of the chest.

STINGS OF INSECTS. (See Poisonous Wounds.)

STOMACH, INFLAMMATION OF.

Acute inflammation of the stomach is a rare disease. When severe, it is characterized by symptoms which distinguish it from other disorders.

Symptoms.—After the usual premonitory symptoms of all acute inflammatory affections, such as pain of the limbs and

loins, slight giddiness, lassitude, general uneasiness, and a fit of shivering or chills alternating with flushes of heat, the patient is attacked with burning pain at the pit of the stomach, nausea, retching, great anxiety, and extreme restlessness. There is an urgent and constant desire for cold drinks, which for the most part are no sooner swallowed than they are thrown up again, mixed with portions of mucus or bile. The region of the stomach generally feels unusually hot, and the slightest pressure upon it greatly augments the pain. The pulse is quick and small, sometimes soft, but more frequently hard; the tongue, at the commencement of the disease, may be white and furred, or it may present no particular appearance, but in general it soon becomes rough in the centre and towards the root, while its edges and point are red. In bad cases the pain extends upwards along the gullet and across the abdomen, attended with a great sense of tightness, and shooting pains are felt extending to the back between the shoulders; the breathing is quick, hiccup is a more or less troublesome symptom, and the countenance is expressive of anxiety and extreme suffering. If the disease continues to gain ground, the thirst becomes unquenchable; and although the patient is well aware that whatever he takes into his stomach will be almost immediately vomited up with great pain, yet so urgent is the thirst that he is unable to resist the craving for cold drink, with which he is unceasingly tormented; the breathing becomes quick and laborious; the patient lies on his back, and perhaps faints when any attempt is made to raise him up in bed; the pulse is now small, feeble, and intermitting; cold sweats break out all over the body, the extremities are cold, the features are shrunk, and for some time before death there is great prostration of strength.

Treatment.—When inflammation of the stomach gives rise to the alarming train of symptoms above enumerated, we have always reason to suspect that some acrid or corrosive substance has been swallowed, such as arsenic, cantharides, or corrosive sublimate; because we know that this violent form of the disorder seldom occurs independently of the operation of irritating poisons. If, therefore, the vomiting and other symptoms already noticed, which announce the disease, can be traced to this cause, no time should be lost in removing the poison from the stomach. This is most effectually done with the stomach-pump; by means of this instrument the surgeon fills the stomach with warm water, then pumps it out, introduces more water, removes it in the same way, and continues in this manner to fill and empty the stomach until the fluid comes away quite clear. But if medical aid cannot be obtained, an emetic

of from twenty-five to thirty grains (1.61 to 1.94 gram) of the *sulphate of zinc* (*white vitriol*), or ten grains (.65 gram) of the *sulphate of copper* (*blue vitriol*), dissolved in a wine-glassful of water, should be administered as soon as possible. These emetics are to be preferred, because they act more promptly than ipecacuanha or tartar-emetic. After the poison has been removed, whether by means of the stomach-pump or an emetic, the ordinary remedies for inflammation of the stomach are to be employed according to the urgency of the symptoms.

Causes.—The occasional causes of inflammation of the stomach are excess in *eating and drinking*, *bad liquors*, indulging in the use of highly seasoned food, blows inflicted over the stomach, drinking cold water or using ices when the body is overheated from exercise, exposure to cold and damp, or any of the ordinary occurrences which produce inflammation in other organs or parts. In children it occurs most frequently during the process of dentition, and it often arises during the course of fevers and other inflammatory disorders of warm climates.

Treatment.—*All the treatment that is necessary is rest, abstinence from food, ice melted in the mouth, and a very small dose of magnesia.* The patient generally recovers in three or four days.

CHRONIC INFLAMMATION OF THE STOMACH.

The symptoms of this affection closely resemble those of dyspepsia. (See Dyspepsia.)

It is impossible in many cases to distinguish between the two diseases; they are, indeed, essentially one. Dyspepsia is a symptom of chronic inflammation of the stomach. All the symptoms of dyspepsia may exist, however, without any inflammation of the stomach. Dyspepsia is usually and chiefly a nervous affection, particularly among the brain-working and luxurious classes. Among barbarous people and ignorant, degraded classes it is more frequently a symptom of chronic inflammation of the stomach, caused by *gluttony or some error of diet*.

ULCER OF THE STOMACH.

This is found most frequently in persons of delicate constitution.

The symptoms are the general symptoms of dyspepsia, together with *vomiting of blood*, *localized pain* in the stomach on pressure.

Treatment.—*Sub-nitrate of bismuth* in doses of ten or twenty grains (.65 or 1.29 gram) every six hours.

Ice, in small bits, chewed or sucked.

Opium in small doses, alone or combined with nitrate of silver
The following prescription:

Sub-nitrate of bismuth, 2 drachms (8 grams),
Dilute hydrocyanic acid, $\frac{1}{2}$ drachm (2 grams),
Mucilage, 2 ounces (64 grams),
Peppermint-water, 2 ounces (64 grams).

Dose.—One tablespoonful.

CANCER OF THE STOMACH.

This is indicated by some of the same symptoms as ulcer of the stomach. (See Cancer of the Stomach.)

The treatment of ulcer of the stomach and cancer of the stomach is substantially the same. Both are severe and fatal diseases. (See Cancer of the Stomach.)

STONE AND GRAVEL.

Stone and gravel are the terms applied to concretions formed in the kidneys and bladder by a morbid deposition from the urine. This fluid, when in a healthy state, contains in solution at least twelve different ingredients; of these, some belong to the class of acids, others are alkaline or earthy substances. Now, in certain morbid conditions of the system, the urine undergoes changes within the body; and some of these ingredients accumulate until they are no longer held in solution, but are deposited in a solid form in the kidneys or bladder. The salts which form the deposition are chiefly of two classes, depending on two distinct states of the constitution, with which they are respectively associated. In the *first class*, which is by far the most common, the lithic or uric acid, and lithates, more especially the lithate of ammonia, form the deposit which is called, in popular language, *red gravel*, whether it appear in the form of sand or distinct concretions. In the *second class*, the deposition consists of the phosphatic salts; namely, the ammonio-magnesian and the phosphate of lime, generally the latter. This species of the disorder is known under the denomination of *white gravel*.

The passing of red sand or gravel is preceded, during a considerable length of time, by a copious deposition from the urine of a tawny, reddish-brown, or brick-dust color, or of a more or less vivid pink hue. The urine from which this sediment is precipitated, when first voided, is generally clear, rather scanty, and high-colored. It

is most frequently met with in children, and in persons beyond forty years of age.

All authors who have written on this subject have noticed the intimate connection which exists between gravel and gout; both diseases, in numerous instances, appear to derive their origin from the same source. The peculiar condition of constitution, whether derived from hereditary origin or acquired by luxurious living, which is considered essential to the production of gout is acknowledged on all hands to be of the same nature as that which is associated with gravel. Sudden and frequent alternations of temperature, long exposure to cold and wet, and similar circumstances, are classed as predisposing causes of considerable influence; and this appears probable from the fact that gravel complaints are more common in temperate than in very cold or warm climates; indeed, in the latter these disorders are scarcely known, probably owing to the free perspiration which is kept up by the constant heat. It has been well ascertained that the red gravel occurs most frequently in persons whose skin is habitually harsh and dry; in fact, a free and regular action of the skin seems almost incompatible with the occurrence of this form of the disorder. (*For method of relieving an attack or fit of gravel, see Kidney, Diseases of.*)

The medical treatment consists in the use of alkaline remedies, for the purpose of correcting the morbidly acid state of the stomach and of the urine. The medicines of this class usually employed are soda, potash, and magnesia; these are administered either to prevent the formation of red gravel, where the state of the urine above described exists, or to palliate the symptoms where the disorder has already commenced. From half a drachm to a drachm (2 grams to 4 grams) of *bicarbonate* (commonly called carbonate) of *soda* or of *potash*, dissolved in from half a pint to a pint or more of barley-water, toast-water, rice-water, linseed-tea, decoction of quince-seed, or any other mild diluent, should be taken twice or thrice a day, according to circumstances, about two or three hours before or after eating, and continued daily for a considerable length of time. These alkaline salts may, in most cases, be taken for many months without deranging the digestive organs, and with much benefit to the patient's general health. If, however, the stomach become weakened from their long-continued use, it will then be advisable to take them along with an *infusion of camomile flowers*, or dissolved in a *decoction of gentian* or of *calumbo*. The manner of preparing and using these tonic remedies has been already pointed out in other parts of this volume. *Magnesia*, in doses of ten grains (.65 gram) once or twice a day, has sometimes

been found more serviceable than the carbonate of potash or of soda. Equal parts of *lime-water* and *rennet whey* constitute one of the best remedies that can be employed in this species of gravel. Every alkaline medicine, when taken for a long time, is apt in many cases to disagree with the stomach; it is therefore, in general, advisable to vary these remedies, rather than to persist long in the use of *any one* of them in particular. In making out the two kinds of gravel the microscope is of great service. (See Microscope.)

The *second* kind of gravelly disorders, in which the urine deposits the phosphatic salts in the form of white sediment or sand, generally depends on some constitutional derangement of a serious character, or on great irritation or organic disease of the urinary organs. In the first, or lithic-acid, gravel, the urine is generally more or less scanty, high-colored, and deposits a red sediment; here, on the contrary, it is of a pale color, secreted abundantly, and deposits, when cool, a copious white sediment, sometimes white sand. This species of gravel is also frequently met with among the ill-fed and half-clothed children of sickly or dissipated parents in the lower classes of society. The countenances of persons affected with red gravel often appear florid, and the appetite is good; but in this form of the disorder the face is pale, and appears careworn; the patient is unfitted for any ordinary mental or bodily exertion; he becomes irritable, discontented, and gradually loses flesh; he has little or no appetite, and is troubled with flatulency, constipation, and other symptoms of indigestion. In this state of things the patient, if residing in a large town, should remove to a healthy part of the country, and remain as much as he can in the open air; he may take daily a few glasses of wine, or some sound malt liquor; his diet should be nutritious, and composed of such articles as the stomach will most easily digest. Where the object is to invigorate the system and improve the general health, it would be impossible to lay down a general rule with regard to the kind of food which ought to be taken; this must depend on the peculiarities of constitution and previous habits of each individual. As the celebrated Van Swieten justly remarks, "to assert a thing to be wholesome without a knowledge of the condition of the person for whom it is intended is like a sailor pronouncing the wind to be fair without knowing to what port the vessel is bound."

To quiet the irritability of the system which always accompanies this form of the disorder, *opium* will be found an invaluable remedy; it may be given to the extent of two or three grains (.13

or .19 gram) daily until the irritation is in a great measure quieted. To correct the predominance of alkali or alkaline earths in the urine, it is usual to prescribe acids. Ten drops of *diluted muriatic acid*, or the same quantity of *elixir of vitriol* or *diluted nitric acid*, may be given three times a day in an *infusion of gentian* or *calumbo*.

STONE IN THE BLADDER

Arises, in the great majority of cases, from a portion of gravel having passed from the kidney along the ureter to the bladder, and there gradually increased in size by successive depositions upon its surface; sometimes it originates in the bladder, and occasionally the nucleus of the stone consists of a clot of blood, or a foreign body which has accidentally got into the bladder, such as the broken end of a catheter or a portion of a bougie.

The immediate relief which follows the escape of a small stone from the kidney into the bladder often deceives the patient, and leads him to believe that all danger is past. The means most likely to secure the passage of the stone out of the body are not resorted to, and this neglect is generally fraught with consequences of the most distressing and ultimately dangerous nature.

Should timely measures not be adopted to remove the stone, a train of painful symptoms are sooner or later manifested, and the patient's life is rendered miserable. At first a dull uneasy sensation is occasionally felt about the neck of the bladder, at the lower part of the belly, or in the groin, and the patient experiences an unusually frequent desire to make water. The symptoms soon undergo a change for the worse, the desire to make water becomes more frequent and urgent, with an inclination to empty the bowels at the same time. While the urine is flowing the stream is suddenly stopped, so that it is expelled, as it were, by fits, the expulsion of the last drops being attended with excruciating pain. The urine is mixed with mucus, and is often tinged with blood, particularly after exercise; pain is frequently felt at the point of the penis, more especially after making water, walking, or taking any ordinary bodily exercise. "This pain is one of the most marked symptoms of the disease. A child who labors under stone tells you of it, not in words, but in his actions. He is always pulling at the end of the penis, and pinching it with his fingers, even so as to cause the prepuce (foreskin) to become elongated. You often find his fingers with the skin soft and sodden, as if they had been soaked in water, from the urine which had been imbibed."

The suffering is greatly aggravated by the motion of a carriage or riding on horseback.

A patient affected with stone in the bladder may do much to palliate the painful symptoms to which it gives rise, by strict attention to diet and the judicious use of medicine. Whatever remedies are employed, they should be directed to correct the particular states of the constitution on which the formation of different kinds of stone depend. If the lithic-acid condition of the urine predominate, which is generally the case, the alkaline remedies already directed should be had recourse to, not with the expectation of dissolving the stone, but of restoring the urine to its healthy state and improving the general health. Great care should be taken in proportioning the doses of these remedies to the particular circumstances of each case.

Surgery possesses two methods of extracting a stone lodged in the bladder. The *first* is *Lithotomy*, an operation which consists in making an incision into the bladder sufficiently large to allow the surgeon to lay hold of the stone with forceps and extract it entire. The *second* is *Lithotrity*, which consists in breaking the stone within the bladder by means of certain instruments constructed for the purpose, so that the fragments may be discharged from the bladder by the natural passage.

Patients should not be afraid to undergo either of these operations when recommended by a competent and honorable surgeon.

STRICTURE OF THE URETHRA.

When a part of the canal or *urethra* which conveys the urine from the bladder out of the body is rendered narrower than it is in a natural state, in consequence of morbid action or a change of structure, the disorder is called stricture. Writers on this subject generally agree in describing strictures under three forms: the spasmodic, the inflammatory, and the permanent.

Spasmodic stricture, not associated with inflammation, is a rare disease. It comes on suddenly, and is not attended with pain until the patient attempts to make water. Various causes are said to give rise to this kind of stricture: it may proceed from exposure to cold and damp, excesses in drinking wine, spirits, etc., retaining the urine too long in the bladder, irritation of distant parts; or "even an irritated state of mind, or a mind deeply engaged in study, will occasionally influence the nervous system to such a degree as to produce spasmodic stricture of the urethra."

Treatment.—*Put the patient in a warm bath.* In obstinate cases administer ether to relax the parts, and introduce a bougie or catheter. “You should introduce a bougie,” says Sir A. Cooper, “letting it steal gently along the urinary passage, and when it arrives at the strictured part there let it rest for a short time; after this you should gradually push it forward, using only a very slight force, but continuing that force until you have succeeded in passing the stricture. Let the bougie rest for a minute or two in the strictured part, and then withdraw it; the patient will be immediately enabled freely to pass his urine. If you have not a bougie at hand you may employ a catheter, and it will answer equally well; you must take care, however, to use it gently, as I have just described.” The chief point to be attended to in such cases is not to irritate the parts by attempting to pass the stricture with a bougie, or to reach the bladder with a catheter. If much resistance be offered to the introduction of instruments, it will be better to have recourse to other means rather than persist in overcoming the obstacle by using force. The bowels should be well cleared out by means of copious injections of warm water, and afterwards an injection consisting of fifty or sixty drops of laudanum with a wine-glassful of warm water should be administered, or from forty to fifty drops of this medicine may be given by the mouth; and the dose may be repeated after a few hours, if the patient be not relieved. (See Urine, Retention of.)

PERMANENT STRICTURE.

This is by far the most common form of stricture, and in the great majority of cases proceeds from gleet or frequent attacks of gonorrhea, riding horseback, and so forth. Astringent injections employed in the cure of gonorrhea and gleet are sometimes the causes of stricture.

The number of strictures varies in different cases. The usual number is one, or at most two; but cases have occurred where six, or even more, existed at the same time. The form of stricture also differs. In the callous or indurated stricture the whole circumference of the passage, or only a part, may be affected. Some strictures are confined to a small part of the circumference of the urethra, or they may occupy from half an inch to an inch of the canal; in other instances, again, the stricture is formed by a small band stretching across the urethra.

It frequently happens that persons, either from ignorance or inattention, are affected with stricture for a considerable length of

time without their knowledge; but as the disorder gains ground the symptoms become sufficiently urgent to attract the patient's attention, and convince him of the nature of his ailment. "At the commencement of every permanent stricture you are made acquainted with the real nature of the complaint by the following symptoms. The first is the retention of a few drops of urine in the urethra after the whole appears to have been discharged, so that when the penis has been returned into the small-clothes, the linen becomes slightly wetted; and if you press on the under side of the urethra a few drops more will be voided, which had collected between the bladder and that part of the urethra where the stricture is situated. The next circumstance you notice is an irritable state of the bladder. This is evinced by the person not being enabled to sleep so long as usual without discharging his urine. A man in health will sleep for seven, eight, or nine hours without being obliged to empty his bladder; but when he has a stricture, he cannot continue for a longer period than four or five hours, and frequently much less even than this. The next circumstance observable is the division of the stream; the reason of which is that the urethra is in an uneven state from the irregular swelling that surrounds it, and consequently the urine is thrown with an inequality of force against its different sides; sometimes the stream splits into two, becoming forked; sometimes it is spiral; at other times it forms, as it were, a thin sheath. Occasionally the stream rises perpendicularly, its long axis being at right angles to the long axis of the penis; thus, then, the retention of a few drops of urine after the whole appears to have been discharged, a more frequent propensity to make water than when in health, and the peculiar character of the stream, as just described to you, will be conclusive evidence of the existence of stricture."

Treatment.—Patients afflicted with permanent stricture should place themselves under competent surgical care whenever possible.

Various plans have been proposed for the cure of permanent stricture, but almost the only method of treatment now employed is the gradual dilatation of the part by means of bougies.

The first thing to be done is to ascertain the situation of the stricture, by passing a common-sized bougie into the urethra. The introduction of this instrument requires considerable caution and address; it should be first warmed before the fire, or dipped in warm water, then smeared with olive-oil or lard; if made of wax, it should be slightly curved in the form of a catheter, and is then to be gently passed along the canal until the stricture prevents it from proceeding farther; it is then to be withdrawn. On the following day, a small

conical or taper-shaped gum-elastic bougie is to be introduced ; it should be of the same size as the stream of urine, and, being previously greased as above directed, is to be carefully passed along the urethra. When it reaches the stricture it should be allowed to rest a little, and is then to be pushed gently forward ; if resistance be still offered it must be again allowed to rest for a minute or two, so as to avoid producing irritation or pain. If we succeed in introducing the instrument through the stricture, the cure is then in our power ; but sometimes this cannot be effected without repeated trials and a great deal of trouble. When the bougie is introduced, it becomes tightly grasped by the stricture, and the patient is to retain it in that position until it passes through the stricture easily ; this generally soon takes place—in many cases only a few minutes are required ; it is then to be gently withdrawn. On the next day, or not until the expiration of two or three days, if irritation occur, the same bougie is to be again introduced, and if it pass easily, one a little larger is to be employed, and the same directions followed. In this manner the treatment is to be conducted, substituting successively larger bougies, always taking care to allow sufficient time to elapse between each introduction, in order to avoid irritation of the urethra ; should this arise, the employment of a larger instrument is to be deferred until the symptoms of reaction pass off. By thus steadily but cautiously persevering in the introduction of bougies, the stricture will be at length overcome, and the largest bougie may be passed with facility. Five or six weeks, or perhaps a considerably longer period, may be required to complete the cure ; but this mode of treatment, though slow, is safe and very successful. No attempt should ever be made to get rid of a stricture suddenly, because it has been well ascertained that the dilatation is the more durable the more slowly it has been effected.

After the stricture is relieved the patient should pass a bougie or a catheter, once or twice a week, for a fortnight or three weeks, and afterwards at longer intervals. Should the stream of urine at any time diminish, he must again have recourse to the gradual process of dilatation above described, until the cure be permanent.

In long-neglected strictures, it sometimes happens that even the smallest instrument cannot be introduced into the bladder. In cases of this description much benefit will be derived from very carefully introducing a bougie every day, and gently pressing on the face of the stricture. By patiently persevering in this mode of treatment, a depression is made on the anterior part of the structure, and ultimately the bougie will penetrate the constricted part. The cure may then be completed by gradually dilating the stricture, as

already directed. Sometimes five or six weeks are required in obstinate cases before the instrument can be passed, but in general the obstruction is soon overcome. Of late years surgeons have been in the habit of radically curing stricture by cutting them internally with instruments specially devised for that purpose. It is claimed that the results are more permanent than when gradual dilatation is used.

STY—(*Hordeolum*).

A sty is simply a small boil, projecting from the edge of the eyelid. Matter forms slowly, but at last the tumor is observed to point; that is to say, a small white speck appears on its most prominent part. After a longer or shorter period, sometimes two or three days, it bursts, and a small quantity of matter is discharged along with a little mass of disorganized cellular membrane commonly called the *core*; the swelling then subsides, and the eyelid soon resumes its natural appearance. But it often happens that only a small quantity of curdy-looking matter is discharged, and the core is retained within the tumor; the opening heals, and the swelling continues for a considerable length of time. In other cases, again, the suppurative process advances slowly, and the sty remains hard and painful, without showing the slightest disposition to point, or to undergo any further change.

Treatment.—The treatment of styes is very simple. They usually get well of themselves, but their course may be hastened.

Apply warm poultices of bread and water, or of linseed meal, enclosed in a small linen bag. A fresh poultice should be applied at least three or four times in the course of twenty-four hours, and each time the eye must be well fomented with warm milk and water. These local applications are to be assiduously employed until the suppurative process is completed and the matter discharged.

SUNSTROKE—ISOLATION—HEAT PROSTRATION.

This is a sudden attack in hot weather, and after or during exposure to the heat, of loss of consciousness, with convulsions or stupor. The affection oftentimes so closely resembles apoplexy that it is difficult to distinguish it. It is sometimes called "heat apoplexy." It does not, however, have the paralysis of one side of the body that accompanies apoplexy.

Patients are suddenly taken with pain in the head, sickness at the stomach, vomiting, dizziness, blurred vision, general feeling of

weakness that goes on to unconsciousness. Before assistance arrives the patient is generally in a condition of stupor. The pupils are sometimes dilated and sometimes contracted. The pulse at first is full, as in apoplexy, but afterwards becomes feeble. The disease is fatal in half the cases.

Treatment.—*For cases that are very much debilitated.*—Remove or loosen the dress of the patient, and do not attempt to take him home or to any hospital, unless near by. Let the air about him be as cool as possible. Give small doses of whiskey or brandy by the mouth, and inject some into the bowels. Sponge the surface of the body with spirit and water. *Avoid* purges and emetics.

For cases that closely resemble apoplexy.—Apply cold to the head, ice, and wet cloths; raise the head; apply mustard plasters to the calves of the legs; give a drop of Croton oil on the tongue. (For other treatment, see Apoplexy.) The physician can use hypodermic injections of quinine, which, as it is now proved, lowers the temperature.

The history of the early investigations of sunstroke are thus presented by Aitken :

“ One of the earliest accounts of sunstroke, in which its nature was distinctly recognized, is that given by Mr. Russell, of the 73d Regiment, while in medical charge of the 68th, in May, 1834. The regiment had then recently arrived in Madras—a fine corps of men in robust health. The funeral of a general officer being about to take place, the men were marched out at an early hour in the afternoon, buttoned up in red coats and military stocks, at a season, too, when the hot land winds had just set in, rendering the atmosphere dry and suffocating even under the shelter of a roof, and when the sun’s rays were excessively powerful. The funeral procession forthwith advanced; and after having proceeded two or three miles, several men fell down senseless. As many as eight or nine were brought into hospital that evening, and many more on the following day. Three men died—one on the spot, and two within a few hours. The symptoms observed (and they were alike in the three cases) were, first, excessive thirst and a sense of faintness; then difficulty of breathing, stertor, coma, lividity of the face; and, in one whom Dr. Russell examined, contraction of the pupil. The remainder of the cases (in which the attack was slighter, and the powers of reaction perhaps greater, or at all events sufficiently great) rallied; and the attack in them ran on into either an ephemeral or more continued form of fever. The symptoms of these cases did not more nearly resemble each other than did the post-mortem appearances. The brain was healthy in all; no congestion or

accumulation of blood was observable. A very small quantity of serum was effused under the base of one; but in all three the lungs were congested, even to blackness, through their entire extent; and so densely loaded were they that complete obstruction must have taken place. There was also an accumulation of blood in the right side of the heart, and in the great vessels." (*Medical Gazette*, "Grave's Clinical Lectures.")

In many cases of sunstroke the victim does not become unconscious, but is merely weakened and made dizzy, nervous, and irritable. The effects of the prostrations sometimes last for months, and years. I have treated many cases where a long series of nervous symptoms resulted from a single exposure to excessive heat. Our nervous Americans cannot be too cautious in this respect during our hot summer.

SUPPORTERS.

During the last quarter of a century many improvements have been made to relieve deformities of various kinds. There are many forms of apparatus for holding the womb in position, for the



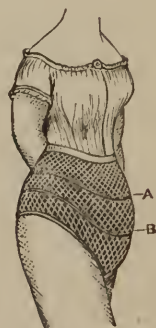
DOUBLE GROIN, SCROTAL, AND THIGH TRUSSES,
FOR HERNIA OR RUPTURE. [C. E. Riker, N. Y.]



NAVEL TRUSS.



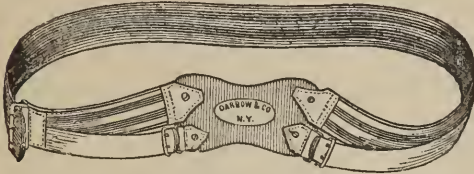
SUPPORT FOR FALL-
ING OF THE WOMB.



ELASTIC ABDOMINAL BELT.

relief of hernia or rupture, and for the relief of fractured limbs and injured joints. (See illustrations.) Some of these mechanical

appliances are very ingenious and exceedingly useful; and there are very many cases that cannot be successfully treated without



DR. THOMAS'S ABDOMINAL SUPPORTER.

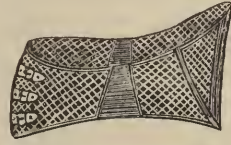
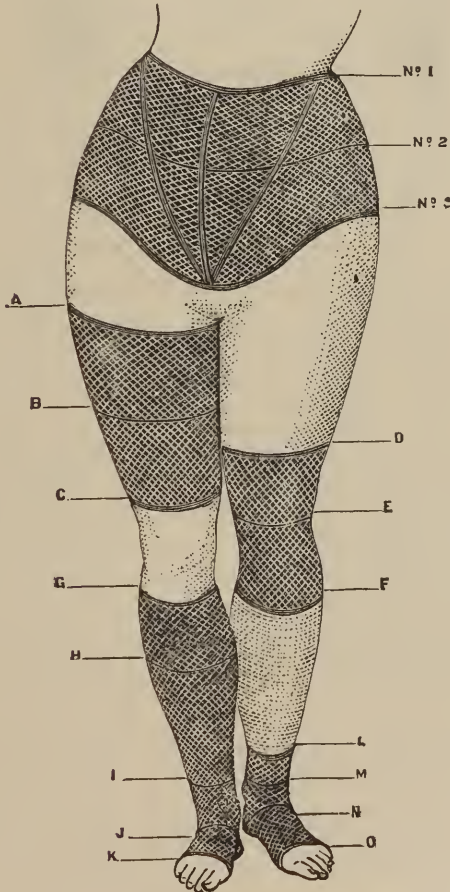
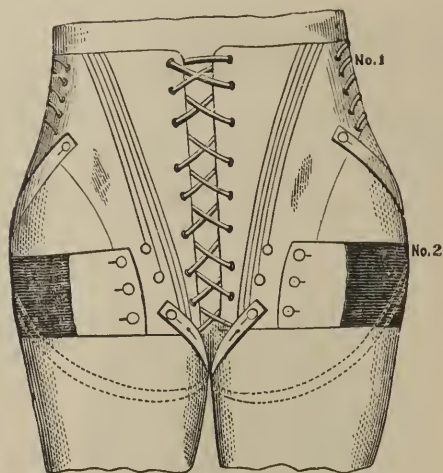
EUROPEAN BELT FOR
ABDOMEN AND WEAK BACK.

DIAGRAM FOR SELF-MEASUREMENT.

DIRECTIONS.—For Abdominal Supports or Belts, take the measurement in inches at Nos. 1, 2, and 3, or at A and B. For Elastic Thigh Stocking, at A, B, C, G, H, I, J, K. For Stocking above the Knee, measure at D, E, G, H, I, J, K. For Stocking to the Knee, G, H, I, J, K. For Knee Cap, D, E, F. For Anklet, L, M, N, O. [*C. E. Riker, N. Y.*]

them. The ingenuity of Americans is particularly noteworthy in relation to this subject.



WILLIS'S ABDOMINAL SUPPORTER.

The diagram on page 937, with directions for self-measurement, will be found useful to those at a distance from surgical-instrument makers.

SUPPOSITORIES.

Suppositories are medicinal substances introduced in a solid form into the rectum, there to remain and dissolve gradually. In this manner opium, the extracts of henbane, iodoform belladonna, hemlock, etc., are employed to relieve the pain and irritation arising from diseases of the lower bowel, the womb, the bladder, the prostate gland, and adjacent parts. Aloes and soap are sometimes introduced as a suppository, to destroy the small thread-worms called *ascarides*.

SUSPENDED ANIMATION. (See Drowning.)

SWEATING—HYPERIDROSIS—PALMAR HYPERIDROSIS—UNILATERAL SWEATING.

Abnormal sweating of the hands—palmar hyperidrosis—is one of the many symptoms of functional nervous disturbance. In some cases this sweating is most profuse and annoying. Sweating of half of the body is also a well-recognized disorder. I have seen a

case of abnormal sweating of the armpits that was most distressing during cold weather.

This abnormal sweating is a nervous symptom, and is to be treated by nerve remedies. (See Neurasthenia, and Sexual Exhaustion.) One of the best remedies in the physician's hands for sweating is belladonna used locally and atropine hypodermically.

SYPHILIS—POX—VENEREAL DISEASE.

There are few complaints more prevalent, or of more interest to the public than venereal diseases. The business of the medical man is to relieve the bodily sufferings of his fellow-men, without inquiring how those sufferings may have been produced. His duty is simply to prevent or cure disease, by medical counsel or the administration of remedies; and he may, with a safe conscience, reject all other considerations, provided he can attain the great object of his labors—the restoration of health. The term venereal disease includes syphilis, which is a constitutional disease, and a number of distinct local affections.

Causes.—Syphilis arises from the introduction of a peculiar animal poison into the system. The manner in which the poison or virus is generally introduced is well known.

The poison of syphilis may be communicated in various ways. It has, in a number of well-known instances, been communicated through a bite, when the wound inflicted has been sufficient to break the skin. There are many instances also where it has been communicated through a kiss on the lips. Surgeons, especially obstetricians, sometimes contract the disease through an abrasion or hang-nail on the finger. All the constitutional effects of syphilis follow, or are liable to follow, any one of these modes of contagion.

When once in the system, syphilis becomes transmissible, and is liable to appear in near or remote offspring. Children are often born syphilitic. Even when apparently cured, it sometimes breaks out in the children; this is, indeed, the worst feature of this dreadful disease. While there has been much exaggeration on this subject, there is no question that even in our good society there is not a little misery and distress, and serious disease of various kinds, caused by inherited syphilis; for when once in the system it is liable to attack any one or all the organs—the eyes, the ears, the throat, the skin, the nose, the teeth, the hair, the finger-nails, the brain, the spinal cord, and any of the nerves. Not a few of the nervous diseases are of syphilitic origin.

It is, however, a great consolation that syphilis, in all its myriad manifestations, is now treated much more successfully than formerly; the malady, common as it may be, is, on the whole, milder than it once was, and can be quite successfully controlled by treatment faithfully carried out for months and years. Each case must be closely watched and studied while under treatment. Nervous diseases of a syphilitic origin are more readily relieved and cured than the same diseases from any other cause.

The poisonous matter, having been placed in contact with some part of the genital apparatus, excites a sore, which secretes poisonous matter similar to that which first gave rise to the sore; after a certain lapse of time the poisonous matter is taken up, mixes with the blood, and produces a regular succession of disorders or secondary affections in the skin, throat, or other parts of the body.

Chancre.—The sore produced by the application of the syphilitic virus to the skin is called *chancre*, but it does not follow that every sore which may appear on the genital parts after impure connection is a syphilitic sore, or chancre. Hence a very important question presents itself—viz., by what means can we distinguish simple sores from the true venereal ulcer or chancre? This is a question more easily asked than answered. The medical man can always ascertain the virulent nature of a sore by inoculation; but this is an experiment which others should never venture to make. It will therefore be more prudent for such persons, as a general rule, to regard *all* sores on the genital organs as syphilitic, provided they treat them in the manner presently to be described.

The progress of the sore will assist better in deciding upon its nature than any external characters. The true venereal ulcer commonly pursues a certain course for some time, and is not much influenced by ordinary applications; hence, says Mr. Colles, “if an ulcer be not interfered with by any stimulant or caustic application, and after eight or ten days it shows no disposition to heal, and if at the same time there be an absence of any cause (such as defect in the general health) to account for this obstinate condition of the local disease, we may then pronounce the ulcer to be syphilitic.”

It is unnecessary to confuse the reader with minute descriptions of its varieties; for all practical purposes it will be sufficient to distinguish the five following forms—viz., 1, the common chancre; 2, the indurated chancre; 3, the irritable; 4, the inflammatory; and 5, the sloughing chancre.

Indurated Chancre.—This is the sore which has often been called the Hunterian chancre, because it was so perfectly described by the great John Hunter. It is supposed to constitute the most regular

and perfect type of the venereal ulcer, but it is now met with much less frequently than in former years. In men, chancres generally make their appearance on the glans penis, frænum, or at the angle between the skin and glans, because these are the parts on which the virus is most easily retained; in some rare cases the virus gets into the urinary canal or urethra, and gives rise to a hidden chancre in that part; and this explains the fact why many persons are affected with constitutional symptoms who have never had any appearance of sore or ulcer on the external parts. In females, the sores may occur on any part of the genital organs, in the vagina, or even as high up as the neck of the womb.

The interval between the application of the virus and its effects on the parts is very uncertain; in some few instances, chancres appear within twenty-four hours after the application of the matter. Generally the interval varies from three days to a week; but cases are on record where the disease did not appear until after several weeks. The first appearance of a chancre is generally indicated by an itching in the part where the sore is about to form; a small pimple then arises; this soon contains matter, and turns into a regular ulcer; the base of this ulcer feels hard when it is pressed between the forefinger and thumb; the edges are regular, and the thickening of the tissues which surround it does not spread far into the neighboring parts, but is very circumscribed; the edges of the ulcer are surrounded by a narrow line of inflammation, somewhat similar to that which encircles the small-pox pustule. The bottom of the sore is usually covered with a grayish yellow-colored matter, which adheres *tenaciously* to the abraded surface, and differs evidently from common pus; after some time the secretion becomes altered, and the edges of the sore lose their sharp aspect and become rounded off, the inflammatory areola disappears, small granulations form on the surface of the sore, and it gradually heals, leaving a hardened red mark or cicatrix, which is very apt to break again.

Simple Chancre.—This is the most common form in which the disease appears at the present day. In general features it resembles the Hunterian chancre just described; but the base of the sore is free from *hardness*, and it is not attended with signs of irritation or inflammation.

In *irritable* chancre the surface of the sore is red, and bleeds on the least touch; it is painful, often of irregular appearance, and has a tendency to spread whenever it is excited by irritating applications.

The *inflamed* chancre is nothing more than a simple venereal sore when it is attacked by inflammation; here the sore, generally

in consequence of excesses on the part of the patient, becomes painful, red, and swollen; the regular appearance of the sore is lost, the edges are removed by grayish or black sloughs, and the secretions from the part are of a very acrid and irritating character.

Sloughing chancre generally occurs in persons of broken-down constitution, or who have injured their health by debauchery and excesses of various kinds; it is also apt to occur in those who give themselves up to drinking, etc., while under the use of mercury. In cases of this kind the original sore and the surrounding parts are rapidly destroyed by foul sloughs or gangrene; and unless the utmost attention be paid, the unfortunate sufferer may lose the greater part of the sexual organ.

Syphilis is a disease that no one should attempt to treat for himself, unless he is beyond the call of a physician. Unfortunately, many of those who are attacked by this dreadful malady are so situated that they are obliged to doctor themselves. For the benefit of such, I give an outline of the course of treatment. It is impossible for me to give the treatment in complete detail that will apply to every individual case. The truth is that every case must be studied by itself. By carelessly treating one's self with this disease most serious results frequently happen. (For further remarks on this subject, see Gonorrhea.)

Treatment.—The treatment of chancre is *local* and *constitutional*. We shall first speak of the *local* means, and shall point out a few remedies on which the greatest reliance may be placed. The virus first excites a local sore, but four or five days may pass over before the virus is taken up by the absorbing vessels, and passes into the blood, to produce what are called constitutional symptoms.

This fact leads us to a first rule in the treatment of chancre. As soon as any sore or pimple appears on the sexual organs after impure coitus, it should be immediately cauterized, by passing over it lightly a stick of *lunar caustic*; this may be done twice in succession, but care should be taken not to press the caustic firmly on the sore, or carry it beyond the edges; our object is merely to destroy the *surface* which secretes the virus; a piece of fine dry lint should then be placed over the sore, and supported by any convenient bandage. When the eschar (scab, caused by the caustic) falls off, the caustic may be applied a second time in the same way, as a precaution. Even when the sore has existed for five or six days before it has been noticed, this mode of treatment may be employed. I should here observe that it is only applicable to simple chancre.

When the crust or scab has fallen off the sore should be dressed with some mild astringent or gently-stimulating application. The *zinc ointment*, weakened by the addition of one-third part of spermaceti ointment, is a very useful one; some practitioners recommend the *black wash*; if there be much pain and soreness in the ulcer the following will be beneficial:

Prepared lard, 8 ounces (256 grams),
Wine of opium, $\frac{1}{2}$ ounce (16 grams).

A weak solution of alum, applied with lint, also forms an excellent dressing. During the use of these means the patient should live as quietly as circumstances will permit him, and avoid all excesses in food, drink, exercise, etc. The dressings should be changed at least three times every day.

Under this treatment common chancre will usually heal in a short time. The other forms of chancre require a somewhat different treatment, according to their nature. If the sore be of an *inflammatory* character, we must not think of applying caustic or any exciting remedies; the organ or ulcerated part should be wrapped up in lint, moistened with tepid water or Goulard water, and covered with a piece of oiled silk; the patient should keep as much at rest as possible, live low, and take an opening draught occasionally. For *irritable* chancre the best local dressing is the opiate cerate mentioned above, or a strong aqueous solution of opium.

We have now to speak of the *constitutional* treatment of chancre. When the means already mentioned have been applied *early* and assiduously, the patient has a great chance of escaping what is called secondary syphilis; and, as a general rule, I would not advise the use of mercury for any primary venereal sore except the *indurated* one. Experience shows that this form of sore is very often followed by secondary or constitutional symptoms, and that the cure of the sore itself is hastened by the use of mercury. It is impossible to lay down rules for the employment of this powerful remedy which shall suit every individual case. Generally speaking, the safest preparations that can be employed are *iodide of potassium* in doses of five grains three times a day, and *bichloride of mercury* in doses of one twentieth of a grain. Should the mercury, as it sometimes does, occasion much griping or purging, three grains of the extract of *henbane* or one fourth of a grain of *opium* may be added to the evening dose; it will not be advisable to push the mercury beyond touching the gums. The pre-

cautions to be observed during a course of mercury will be noticed when I treat of *constitutional syphilis*.

SECONDARY SYMPTOMS, OR CONSTITUTIONAL SYPHILIS.

Bubo.—The virus which is secreted by a syphilitic sore may be taken up by the absorbent vessels of the part, and conveyed by them to one or more of the lymphatic glands situated in the groin, where it excites inflammation; the gland thus inflamed and swollen is called a *bubo*. This swelling generally commences on the second or third week after the appearance of the chancre; it may be ushered in by shivering and symptoms of fever; but, generally speaking, the patient's attention is first directed to it by some pain, stiffness, or uneasiness about the groin, and on examination he finds a small knot or tumor; this gradually increases in size and then as gradually disappears, or it may suppurate and break, continuing to discharge matter for weeks or months; in some cases, however, the bubo will remain obstinately stationary for a great length of time.

When a *bubo* first appears we should endeavor to keep it from suppurating by applying the *tincture of iodine*, and by *compressing* it with a tight bandage.

If the inflammation is very active it may be necessary to apply leeches.

If suppuration approaches in spite of all that we can do, we should apply poultices to favor the rapid formation of the pus.

Secondary symptoms are those which make their appearance after the venereal virus has been carried into the blood from a chancre or syphilitic bubo; they very seldom come on before the fourth week, generally towards the sixth or eighth week, but occasionally later. It is not easy to say what length of time may elapse between the occurrence of chancre and the subsequent breaking-out of secondary symptoms; still there is much reason to believe that the stories of confirmed syphilis having appeared several years after infection are fabulous.

Sore Throat.—This form of secondary syphilis occurs very frequently, and is often mistaken for common sore throat; on looking into the back of the throat we see a dusky redness, and here and there circular or semicircular patches, covered with a whitish and very *tenacious* secretion; these patches often occupy the surface of each tonsil; they may remain indolent for a length of time, but sooner or later they ulcerate, and form deep irregular sores; in

ordinary cases the pain, inflammation, and swelling are much less than what we find in common sore throat.

The *local* treatment consists in using gargles, or in touching the sores with some stimulating application. As a gargle, the following will be found useful :

Diluted muriatic acid, 1 drachm (4 grams),
Decoction of cinchona bark, 4 ounces (128 grams).

To stimulate the ulcers, they may be touched occasionally with a strong solution of *lunar caustic*—fifteen or twenty grains (.97 to 1.29 gram) to the ounce (32 grams) of water.

Treatment of Secondary Symptoms.—When secondary symptoms, such as coppery spots on the skin, sore throat, etc., make their appearance after chancre, mercury must be at once employed, with the exception of the cases presently to be mentioned.

Mercury may be administered for the cure of syphilis in either of three ways—viz., as an ointment by friction, as a medicated vapor bath, or internally. The choice of the form in which this remedy should be used must depend on several circumstances; its internal administration is usually the more convenient, but some patients cannot bear mercury when taken into the stomach; in such cases, therefore, we must have recourse to baths or friction.

The method of employing mercurial unction is very simple: from half a drachm (2 grams) to a drachm (4 grams) of *blue ointment* (mild mercurial ointment) should be rubbed in along the inner side of the thigh or leg before a fire every alternate night. The frictions should be alternately on the lower extremities and in the direction of the hair, in order to avoid, as much as possible, irritation of the skin. In some cases where concealment is necessary, instead of friction on the legs, a drachm (4 grams) of the ointment may be placed in the armpit on going to bed.

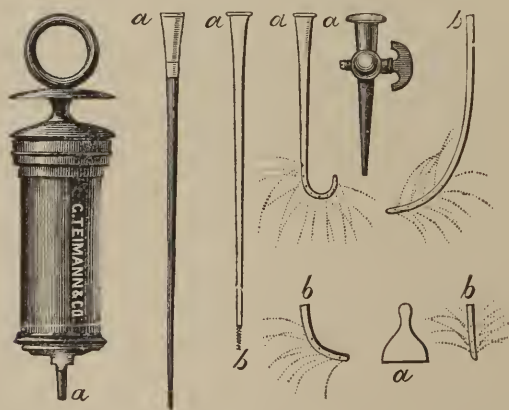
The preparation of mercury for internal use may be the ordinary *blue pill*, two grains (12 centigrams) after each meal, or a powder of calomel or protiodide of mercury thoroughly triturated with sugar of milk, one part in ten. Of this powder two grains (12 centigrams) may be taken dry on the tongue three times a day, and allowed to dissolve slowly in the mouth. This will have an excellent effect when there are ulcers in the throat.

I have already said that mercury is a remedy unsuited for certain states of the constitution; when, therefore, the general health of the patient will not admit of his undergoing a mercurial course, we must employ a remedy which is scarcely less efficacious in the

treatment of secondary syphilis. This remedy is the *iodide of potash*; four grains may be added to a quart of the compound *decoction of sarsaparilla*, and the whole taken at intervals during the day. The iodide must be gradually increased until the patient takes fifteen or twenty grains (.97 or 1.29 gram) in the above quantity of vehicle during the day. When it is not convenient to obtain the compound decoction of sarsaparilla, the simple decoction, or a decoction of *guaiacum*, with a few grains of nitre, will answer. In cases of foul, sloughing ulcers which occur in debilitated subjects, nutritious diet, with opiates at night and the *iodide of iron*, will afford the best chance of cure. The iodide of iron may be administered in the form of syrup or of pill; the quantity to commence with is two grains (.13 gram), which may be gradually increased to ten (.65 gram) daily.

SYRINGES.

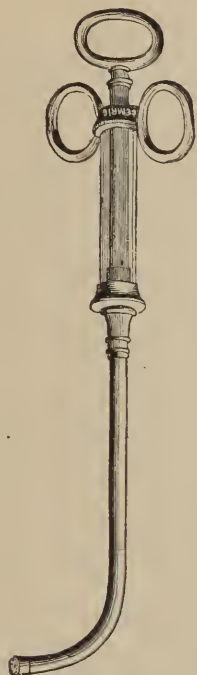
A large variety of syringes are now used by physicians. Besides the ordinary rubber and other syringes for injecting into the bowels, we have the *posterior nasal syringe* for injecting behind the soft palate in the nares. This is much used in the treatment of



SYRINGES.

catarrh of the nose. (See Catarrh.) We also have syringes for the ear, the larynx, the urethra, the vagina, and the womb. Some of these are represented in the accompanying cuts.

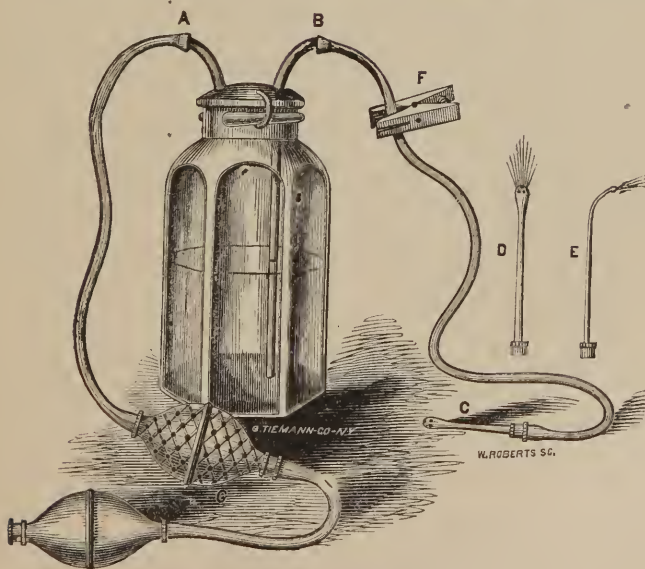
Every family should be provided with some convenient syringe for the bowels. (See Constipation, Treatment of.)



LARYNGEAL SYRINGE.



POSTERIOR NASAL SYRINGE.



UNIVERSAL DOUCHE. CONSTANT CURRENT FOR THE THROAT, UTERUS, ANUS, ETC.

TABES MESENTERICA.

A tubercular disease of the mesenteric glands of the abdomen in childhood.

Symptoms.—The symptoms are loss of appetite, emaciation, tenderness and distension of the bowels, and diarrhea. Only a physician can make the diagnosis. It occurs most frequently between the third and fifth year.

Treatment.—Tonics, such as quinine, tincture of iron, and cod-liver oil, are to be given. *Kumiss*, or fermented milk, is also excellent for this as for all disorders of nutrition.

TEETH, THEIR DISEASES AND MANAGEMENT.

The art of dentistry of modern times has revolutionized the management of the teeth and their diseases.

Causes of Decay of Teeth.—The one great and primary cause of decay of teeth is *civilization*.

In a normal condition of mankind the teeth would be no more likely to decay than do the teeth of animals, but as the practices of civilization are adopted, the physical organization deteriorates and teeth decay.

Investigation and experiment shows that acids act upon tooth structure very powerfully—different acids acting more rapidly than others. An extracted tooth may lie in certain kinds of acid for but a short time before it is entirely dissolved.

So, on general principles, we may say that the presence of acid in some form or other is the cause of decay of teeth in the mouth. This condition may arise from a disordered stomach, or from partaking unduly of acid condiments, acid fruits, or from acid forming as the result of fermentation of particles of food lodging and remaining between the teeth.

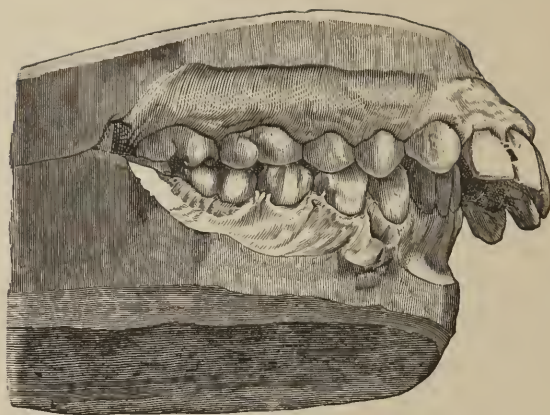
It is quite likely that the last-named cause is the more universal origin of the decay of teeth of the present day.

Hence perfect cleanliness may be said to be a sure preventive of all decay.

This is certainly a safe theory to hold, for if any one will keep their teeth absolutely clean by any means which will prevent all accumulations on the surfaces and between the teeth, there will be very little danger of decay.

Caries attacks the teeth, not by general solution of the whole structure, but at some point which will afford a lodgment for the

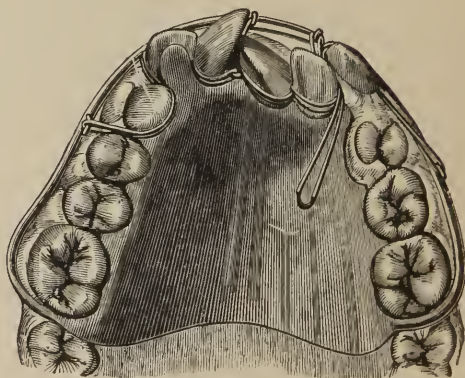
Plate 9.



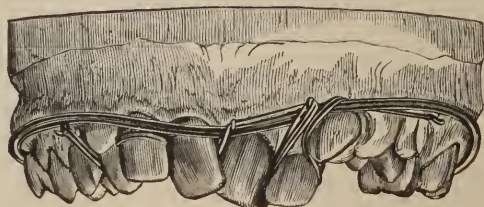
1.



2.



3.



4.

Figs. 1 and 2 illustrate the effects of Thumb-sucking.
Figs. 3 and 4 illustrate some methods of straightening irregular teeth.

erosive element. Thus we find the fissures on the grinding surfaces of the masticating teeth, and the points of contact on the sides of the teeth which afford a lodgment for foreign matter, places peculiarly liable to decay.

Some teeth are naturally of much frailer organization than others and more liable to decay, so that some teeth are so strong that they will withstand all carelessness, while others are so frail that they seem to decay in spite of all care.

Teeth of Children.—With this natural tendency to decay, teeth should be cared for from their earliest appearance. Little children should become accustomed to the use of a small soft brush and early form habits of cleanliness. In addition to this, if children's teeth decay they should be filled before the cavities become large and troublesome.

Gold fillings are unfit for children's teeth, because the great pressure required to make a gold filling is injurious to the structure of a child's tooth. Any of the plastic materials in common use by dentists are preferable.

It is advisable to have the first teeth of children examined frequently by a dentist and filled if needed, thereby saving much pain for the child, much annoyance to the parents, and keeping the jaws in a healthier condition for the growth and eruption of the second set. It is a very common occurrence for a child from seven to ten years of age to be complaining of a toothache *in the last double tooth of the mouth*.

Parents give the matter slight attention, merely trying to palliate it, saying that the tooth will be shed before long and another will come in its place. There is no more common error. This tooth belongs to the second or permanent set, and is never shed, and thousands of valuable teeth are annually sacrificed by this universal error.

When the child is about six years of age, these teeth appear behind all the others, one on each side above and below,—four in all,—and are known among dentists as the “first permanent molars,” or as the “six-year-old molars.”

Let parents, therefore, be particularly watchful of these teeth, and if a dark spot appears on them, indicating decay, have them filled by a competent dentist immediately. Even for these teeth at this age gold is not advisable. Some other filling more easily introduced will be less strain upon the young nervous system.

At a later period of life the commoner material may be replaced with gold if desired.

From eight to twelve years of age is a critical period in the

care of children's teeth. During this time, substantially, all the temporary or milk teeth are shed, and the second or permanent set make their appearance. One after another of the temporary ones become loose and fall out, or are extracted when quite loose, and the permanent successors take their place. It is a grave error to extract two temporary teeth to make room for one permanent one, and should never be done except upon consultation with an educated dentist. An anxious parent will be continually fearful that the new teeth are coming in irregularly; much of the apparent irregularity at that period is corrected by the natural enlargement of the jaw, and requires no interference.

For example, it is very common to see one or more of the four front teeth on either the upper or the lower jaw pointing through the gum, considerably inside or outside of the regular arch.

At that time it presents all the indications of a future deformity, but a little daily effort on the part of the child or the parent, pushing or pulling with the finger as the case may require, is all that is needed, and even this may be unnecessary.

There are two forms of irregularities of the teeth which are within the power of the parent to prevent.

The characteristic of one form is that the canine teeth, commonly called the eye teeth, erupt from the gum outside high above the others, and as they grow point outward and appear like animal tusks. Many regard these teeth as superfluous, *i.e.*, that they are extra to the usual number, and they are extracted at the earliest convenience.

It is an error to regard them as extra or superfluous. They are the strongest and the longest-lived teeth of the whole number.

Their position outside of the arch is generally the result of improper extraction of the deciduous or milk teeth. At from seven to nine years of age the *four* incisors above and the like number below are shed. Their successors are much larger, and will at first give the appearance of being crowded. The temptation then arises to take out the adjoining temporary canine teeth to make room; thus six teeth are removed to make space for four, and the result is that at about eleven or twelve years of age the permanent canines erupt and there is no room in the arch for them.

Figs. 5, 6, 7, and 8 are models of such irregularities which in the writer's practice have been corrected.*

The prevention of this condition lies in a great measure in the retention of the temporary canines in the jaw until their successors

* This article was prepared for me by Dr. N. W. Kingsley, New York.—G. M. B.

are ready to emerge, which will be known by the loosening of the temporaries.



FIG. 5.

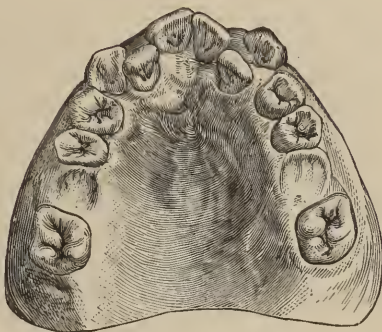


FIG. 6.

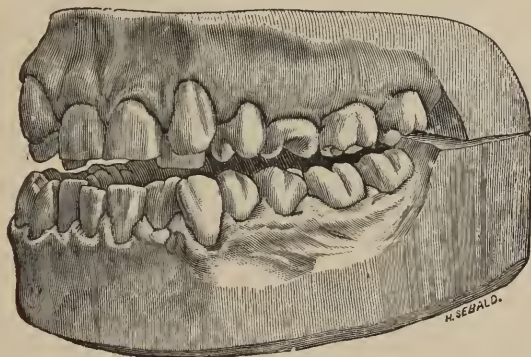


FIG. 7.

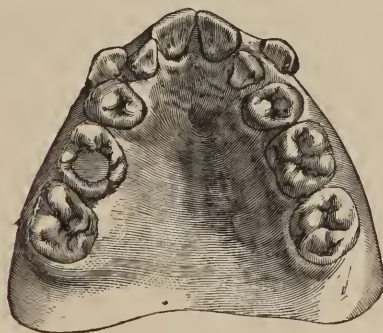


FIG. 8.

Another class of deformities have secured the name of Thumb-sucking cases, because they are the result of that habit. This peculiarity does not show itself to any extent before the permanent

teeth have erupted and are arranging themselves in the arch, although the cause lies back of this period. The supposed innocent habit in early childhood of going to sleep with the thumb or finger in the mouth, or in these later days of artificial nipples, of giving a child one to quiet it, is working mischief in this way—pressure upon the soft and yielding alveolar arch which contains the germs of the second set of teeth causes it to bulge forward, and when the second teeth appear they stick out abnormally and often quite out of the mouth, so that it is with difficulty that the lips can close or cover them.

Figs. 1, 2, 3, 4, and 9 represent such cases which have also been treated in the writer's practice.

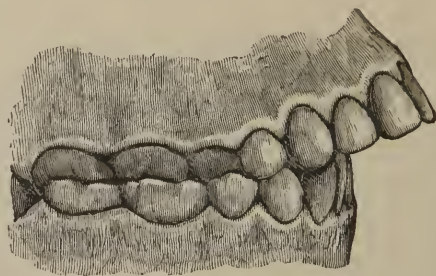


FIG. 9.

A remarkable illustration of such a result growing out of an unusual but similar cause is as follows: A lady belonging to the better classes of society brought me her only daughter, about fourteen years of age, with a like deformity for treatment. In answer to my inquiry of the mother if she knew what had caused it, she replied with a shamed face, "I suppose it was because I let her nurse until she was nine years old. I did not know it would hurt her any."

All such deformities can of course be prevented by not permitting the cause to exist.

There are other cases of irregularities of the teeth, producing marked deformity, becoming now of alarming frequency where the causes antedate the life of the child. (See article under Causes of Irregularities of the Teeth.)

Such irregularities, however, can now be corrected by an experienced and skilful practitioner at any age before full maturity, and a perfectly regular set made in place of a deformed one.

Plate T.



MANNA. — *Elaeagnus opulens*.



TEA. — *Camellia Siamensis*.



OAK. — *Quercus*.



GROUND IVY. — *Nepeta glehmannia*.



STACHYS. — *Stachys limonium*.



BLADDER-WRACK. — *Fucus Vesiculosus*.

TOOTHACHE—(*Odontalgia*).

Causes.—The more frequent causes of toothache are :

First. Decay reaching to the pulp of the tooth, and pain caused by irritation of the nerve contained in the pulp.

Second. Inflammation of the nervous membrane surrounding the root of the tooth, often ending in swelling of the cheek, supuration, and an abscess or gumboil.

Third. Sympathy with some other tooth which is in an unhealthy condition, the real cause often being in a tooth far removed from the aching member.

Besides these come other causes more difficult to diagnose, some local and others constitutional ; of the local ones, exostoses, or bony growths upon the roots of teeth, causing prolonged neuralgic pains, are not uncommon ; and of the constitutional, pregnancy is one of the most common causes.

Treatment.—There is no specific for toothache, for the reason that pain in a tooth may arise from various causes, and the remedy for a pain originating in one cause would not be applicable to a similar pain arising from a different cause. For irritation of the pulp, apply oil of cloves, creasote, carbolic acid, oil of peppermint, laudanum, chloroform, or tincture of aconite. By taking a small piece of cotton wool and saturating it in any one of these remedies and placing it gently in the cavity of decay, the pain will be likely to pass away. If it does not yield with one remedy, another of those mentioned may produce the desired result. Holding liquors or alcoholic tinctures in the mouth is likely to scald and inflame the gums without bringing any relief.

If a dentist is within reach it is better to consult him, and if the tooth is a valuable masticating organ he may apply arsenic ; devitalize and remove the pulp, and afterward fill and save the tooth. If it is not a valuable member, the sooner it is extracted the better. Sometimes, when all applications to the tooth have failed, a mixture of equal parts of chloroform and tincture of aconite rubbed with the finger behind the ear of that side of the head will produce relief.

Toothache of the second variety rarely ever occurs when the pulp is alive. After a pulp has been destroyed or has died from other causes, inflammation of the investing membrane is always liable to occur. In its earlier stages of soreness at the root and grumbling pain, the gum adjacent may be painted freely with a mixture of tinct. iodine and tinct. aconite, equal parts, with much expectation of a subsidence of the pain. If not, leeching the gums

or bleeding freely by any other means may be resorted to; but if in spite of these applications the pain continues, warm fomentations of poppy-heads or warm poultices of any kind applied to the adjacent cheek and kept warm will promote suppuration and bring relief; a little laudanum may be poured upon the poultice, and a dose taken internally, with advantage.

In cases of sympathetic pain which may be located in a sound tooth, the cause must be looked for in a careful examination of all the teeth, and treating such as are decayed rather than the one in which the pain seems to be.

In cases of systemic or constitutional origin the treatment must be constitutional and according to other conditions.

Toothache is sometimes intermittent. For example, it may come on every night, and wear off towards morning; and this sometimes occurs in teeth apparently sound or only slightly decayed. In all such cases the tooth should not be removed until a fair trial has been given to *quinine* or the *arsenical solution* as recommended under the head of *Ague*. It is oftentimes very difficult to decide whether an apparent toothache proceeds from a bad tooth or is a neuralgia simply. The best way to solve the difficulty is to consult a dentist. It is impossible to relieve the pain by the ordinary remedies for neuralgia.

The pain which arises from cutting the wisdom teeth (so called) may be relieved by scarifying the gums and taking cooling saline purgatives.

CAUSES OF IRREGULARITIES OF THE TEETH.

My friend Dr. Norman W. Kingsley, of New York, has published a paper of quite unusual value entitled "An Inquiry into the Causes of Irregularities in the Development of the Teeth," in which he advocates the theory—which is undoubtedly correct—that the irregularities that are so common are the result of the excessive brain activity of our modern civilization. He says:

"The peculiarities of the permanent teeth it is unnecessary to describe in detail. In the departure from symmetry they assume almost every variety of position, so that it would be almost impossible for the human mind to conceive of an irregular arrangement which would not find its counterpart in nature.

"These variations are recognizable by every one of extended observation, and are *deformities*, because they are a greater or less departure from a normal standard. Such a standard cannot, in the very nature of things, be one shape to which all must conform or be classed as deformed.

"Symmetry and harmony do not imply uniformity; and the dental arch may be developed up to the highest type of perfection, and yet there exist as great a variety of form as there would be in the faces of the aggregated beauties of the world.

"Races, nations, and families are thus represented without deformity.

"The normal type of the dental arch I conceive to be a regular line; the arch may be wider or narrower, varying somewhat in individuals or races, but the line would be an easy, graceful curve, without break or tendency to form an angle.

"Within certain limits a narrow dental arch, as associated with certain features, may become the very perfection of beauty, while with another form of head and face the widest development may be equally pleasing. That which is recognized now as the standard or full measure of beauty, as well as of utility, is not unlike that which existed in the remotest historic ages, nor different from that which is now exhibited among all communities not degenerated by luxury or vice.

"In 1864 Messrs. Cartwright and Coleman, of London, made an examination of some two hundred ancient skulls in the crypt of Hythe Church, Kent. These skulls, of which there is no authentic history, further than that they have been there for centuries, were apparently of both sexes and all ages.

"The maxillæ presented in all instances unusually well-developed alveolar arches. The teeth were remarkable for regularity of position, only two deviations being noticed; one upper canine shut within the lower jaw on occlusion, and one bicuspid was turned upon its axis, and there might have been other slight irregularities which were unnoticed, but in no single instance was there anything seen approaching to that which, under the term "contracted arch," so commonly exists in the present day.

"The average width of the dental arch in these skulls from the outside of the first molar to the corresponding point was two and a half inches.

"In 1869 Mr. John R. Mummery, of London, contributed to the Odontological Society of Great Britain the most valuable paper on this subject which I have ever read. I accord more importance to his personal examinations than I do to the observations of any man not a practical dentist. The statements of all others, even those of ethnologists, being less precise and more general in their character, must be accepted with some allowance. He examined all the available skulls of ancient races, and of modern uncivilized races, to the number of about three thousand, and tabulated more

than one half of them, which were classified as follows: Ancient British, 203; Roman British, 143; Anglo-Saxon, 76; and Ancient Egyptian, 36.

“Of modern uncivilized races: North American, 145; Polynesian, 204; East Indian, 223; African, 438; and Australian, 165.

“From a careful analysis of the measurements given in his tables, I find that the average width of the dental arch from first molar across to first molar, in the skulls of ancient races, was a trifle less than two and three eighth inches; the same measurement of the uncivilized moderns showed an average width of a trifle above two and a half inches.

“The narrowest measurement given by him of any skull of any race is two and one eighth inches.

“The highest average of any race is nearly two and three quarter inches, and these belong to the New Zealander, the Fejee Islander, and the Ashantees.

“The narrowest average was found among the Hottentots and Bushmen of South Africa.

“In these tables there is abundant evidence that the full measure and type of both dental and maxillary arches has been sustained among all races of simple habits in all ages.

“Dr. Nichols, a dentist who spent twelve years in the Rocky Mountains on the Pacific Coast, during which period he examined the mouths of thousands of Indians and Chinese, informed me that he never saw an instance of irregularity of the teeth in either of those races, with but one exception, and that a displaced canine in the mouth of a Chinese woman. The jaws of both races are universally well formed and amply developed. And this is also true of all semi-barbarous and savage races of good physical organization.

“The standard of normality of the dental arch is a curved line expanding as it approaches the ends, and the teeth all standing on that line.

“Abnormality will include such a shape of the arch as is not in harmony with the surrounding features, all crowding and twisting, and all departures from a regular line in the positions of the teeth.

“Almost the only answer received by the dental student as to the cause of these irregularities has been ‘premature extraction of the deciduous teeth,’ and consequent contraction of the jaw; and this answer has been almost universally accepted without a question as to its philosophy. A few facts have been correlated, and a conclusion arrived at as unscientific as it is erroneous.

“It is only within a few years that any one has been bold enough

to doubt the universally accepted theory which so glibly accounted for every presentation of abnormality.

* * * * * *

“No one of extended observation will hesitate in believing that there is a faculty or power at work, modifying materially the physique of the present generation, altogether inexplicable by the too commonly asserted influencing power of climate, hygiene, or diet.

“One of the most alarming characteristics of the present age and the present civilization is found in the rapidity of its movements and the activity of its mind, in the larger aggregate of highly organized and excessively developed nervous systems, and in the increasing tendency to nervous and brain diseases.

“As the peculiarities of progenitors in mind, temperament, and physique are by nature stamped upon their offspring, we see a generation of children inheriting a tendency to a nervous exaltation which very slight favoring circumstances encourages and stimulates. This is unquestionably more noticeable in the centres of luxury in this country than in any other portion of the civilized globe.

“Fathers who are under a mental strain to the very verge of insanity transmit that exaltation to their offspring. Children are no longer children, except in their immature physical development; their emotions are under constant stimulus and excitement, and if there is not in all instances an absolute intellectual precocity, we have relatively a mental and nervous development far in advance of the physical. Hence, if the mental is only up to the average of its years, we will find it associated with anything but a robust physique; and the contrast remains the same. One of the manifestations of this precocious, emotional, and exquisitely developed nervous system is its influence upon the development of the teeth, while the physical system is following in tardy but vain efforts to keep pace with it.

“My argument from this universally recognized condition is this: during the formative and eruptive periods of the permanent teeth they are under the influence of an independent and peculiar vital (nervous) force; this innervation pushes on their development and eruption regardless of the more tardy growth of the osseous system; being implanted in a crowded position, in undeveloped maxillæ, they never have an opportunity to recover from it, and emerge in the same disordered arrangement in which the crowns were formed.

“The grounds for such an opinion are not merely theoretical,

but are the results of observations in private practice for more than a quarter of a century in connection with personal investigations of different classes—nations and races, ancient and modern, including all ranks and conditions of life from the highest order of intelligence down to the idiotic.

“In a personal investigation of the mouths of congenital idiots found in the asylums in this country, in Great Britain and France, together with the Cretins of Switzerland, I found with hardly an exception broad jaws and well-developed teeth, showing that when the mind was inactive and the brain sluggish the teeth grew normally and in regular order.”

Dr. Kingsley concludes as follows:

“A perfect dental development is the result of well-balanced physical and nervous systems, without hereditary taint.

“The causes of irregularities I classify as developmental and accidental; the developmental operating prior to the eruption of the teeth, and the accidental subsequently.

“Abnormalities of development having their origin in the same individual are due to a disturbance of the trigeminal nerve during the period in which the crowns of the permanent teeth are forming and arranging themselves in the jaw prior to eruption; or, when arising from causes antedating the life of the individual, are traceable to an inherited tendency, which tendency had its origin in a like disturbance in one of the progenitors, and was subsequently transmitted; or are the result of mixing different and distinctly-marked types of jaws and teeth by the progenitors.

“In our view, we do not call a feeble mind, a sluggish brain, or a dull intellect, a nerve lesion or a brain disturbance. For it is abundantly proven that when this condition is associated with an average physique, the development of the dental organs is tardy, but in regular order.

“We have before us, then, both the solution of the problem and the evidence of most alarming symptoms in the physical and mental condition of the inhabitants of the centres of civilization.

“There can be no question that the Creator intended there should be perfect harmony in the development of physical and nervous systems, and that where such harmony exists we come nearest to the standard of a perfect organization. This harmony of organization or true balance of the two systems demands that in the earlier years of life the brain and the nervous system be held in abeyance to the physical.

“The healthier mental organization is of slower growth. If, therefore, we find that a certain mode of life destroys this har-

mony, breaks up this balance, there will follow necessarily deterioration and destruction of the race; and this is based on well-recognized physiological law; if the brain and the nervous system are in an undue state of activity, the drain upon the sources of nutrition will be at the expense of the physical system.

"No force operating on the brain can interrupt or alter the type or inherited model of the dental arch, after the first decade of life. All brain disturbances occurring during that period showing mental aberration we should class under the general head of idiocy—imbecility. After that period, such manifestations come more properly under the head of lunacy,—insanity,—which might degenerate into imbecility or idiocy.

"Consequently neither lunacy nor insanity, in the ordinary acceptation of the terms, can have any direct bearing upon the development of the dental organs; but such a condition would be most potent of evil if transmitted to offspring.

"I do not hesitate to place it upon record that the next generation will see more of abnormality in dental development, and an increase of nervous and cerebral diseases, and that the two are correlated and spring from the same cause.

"It is too late to stop it in those who have passed infancy, but it is not too late to modify and partially remedy the evil in those now being born, and those who may be begotten hereafter.

To fathers and mothers surrounded by luxury and flattered with the precocity of their infants, which they are stimulating to the last degree, I say, You are the enemies of your race; you are sowing the seeds of nervous, mental, and physical disorders, from which the harvest will be fearful, and the end death to your family and your name. Do not, under peril, encourage this brilliancy of your child, which is now so charming; rather let the mind stagnate.

"For the first seven years of life give concern *only* to his morals and to his physique. Nourish him as you would nourish an animal from which you desired the finest development, stimulating *only* his moral nature, and his intellect will take care of itself. Thus, if he have no hereditary taint, you will have laid the foundation of a splendid specimen of his race."

FILLING TEETH.

If in spite of all our care the teeth decay, they should be filled, which, if properly done, will stop them from decaying in the same place.

The theory of saving teeth from further decay by filling is

based upon the fact that as caries progresses it develops a circumscribed hole or cavity in the body of the tooth. The process of filling consists in removing from the cavity all the decayed or disintegrated portion and stopping up the vacancy with some indestructible substance.

To secure the desired result the filling must be perfectly watertight; if it is porous or leaky through faulty materials or defective workmanship, it cannot be depended upon to save the teeth.

MATERIALS FOR FILLING TEETH.

For more than a generation gold was regarded as the only proper substance with which to fill a decayed tooth, and even now there are a few dentists who pride themselves upon never using anything but gold.

But a larger experience and more scientific investigation has shown the objections urged against other materials are often founded upon prejudice.

Gold has the advantage of indestructibility in its fullest sense: no agent which is ever taken into the mouth affects it injuriously. It possesses the property of cohesion, or of welding under pressure, and thus with small pieces, either in the form of foil or crystals, can be made a perfectly solid and homogeneous mass.

Long experience, however, has shown that to accomplish this in cavities difficult of access and intricate in shape is beyond the skill of most dentists.

Furthermore a better knowledge of tooth structure and the laws of dynamics has shown that the most skilful operations with gold are often the worst operations for saving a certain class of teeth.

The objection to gold is that it requires great pressure, and in many cases prolonged sittings, the first may prove injurious to the tooth substance, tending to break down the tooth structure, while the second becomes a severe strain upon the nervous system.

Teeth are frequently ruined by the blows used in condensing gold.

The necessity has therefore arisen for the use of other materials less objectionable.

Tin-foil makes an excellent filling. It has besides its adaptability some antiseptic properties after it has become oxidized, which it does sooner or later.

Its objections are its destructibility, its color, and the fact that it requires nearly as much pressure as gold to consolidate it.

An amalgam of silver filings and mercury was introduced by quacks about fifty years ago, and in one form or another has been

Plate 18.



FIG. 1.—Jaws of a Child between six and seven years of age, showing the changes which occur when the first set of teeth are shed, and the second take their places. In this illustration the two lower front teeth belong to the second set, also the last double tooth in each row. All the rest will be shed. The crowns of the second set can be seen in jaw below. See pages 949 and 950.

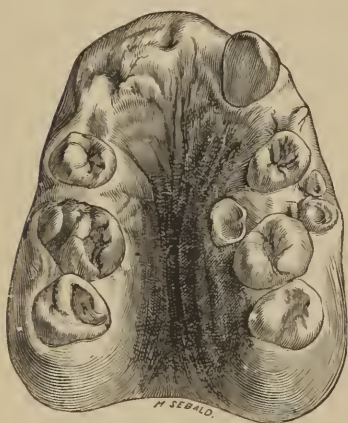


FIG. 2.

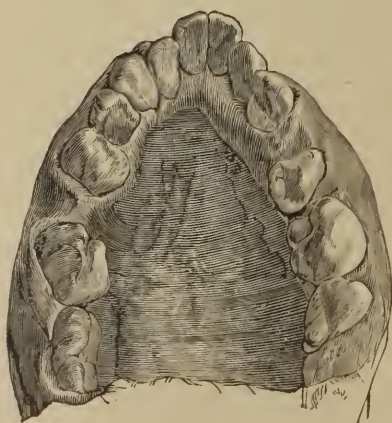


FIG. 3.

FIGS. 2 and 3.—Upper Jaws of Idiots. See page 954.
(From collection of N. W. Kingsley, M. D.)

extensively used ever since. It possesses the property of forming a very plastic mass which in a few hours becomes, by crystallization, as hard as a piece of solid metal. The objections to the original amalgam were that it became very black in the teeth and the teeth also became very much discolored. Hence it was denounced unsparingly by the better dentists, and great prejudice arose in the minds of patients against its use. It was even charged that the metallic mercury which became crystallized in the mass exerted an injurious influence upon the system, but very accurate scientific tests have proved this idea to be fallacious.

In later years much improvement has been made in amalgams by the combinations of various metals, and the principal objections to its use no longer exist.

Its advantages are the ease with which it can be introduced and the certainty with which a tight filling can be made. It is also indestructible. The principal objection to it at present appears to be its color.

Gutta-percha has been used for more than thirty years. For tooth-filling it is combined with some mineral such as ground quartz, which makes it more durable. It is easily introduced, is of a color resembling the tooth, and makes a tight filling. The objections are that it will not bear the abrasion of mastication; consequently is not of much service in cavities on grinding surfaces, but is valuable and quite permanent in proximal cavities.

In addition to the above there are several chemical combinations, the principal of which is a mixture of the oxide of zinc in the form of a powder, and the chloride of zinc in the liquid form. These two are kept separate and mixed when required for use; they thus form a plastic putty-like mass which becomes hard in a few minutes. This preparation is known under the various names of "Oxy-Chloride of Zinc," "Bone Filling," "Os Artificial," "Agate Cement," "Acme Cement," "Porcelain Cement," and a host of other names. Its merit is its color and plasticity.

The objections are: The fluid is an escharotic, and contact of the soft mass with the gum is injurious. Also, the presence of the filling near the pulp may destroy it; besides, as a filling it is soluble in the fluids of the mouth sooner or later.

Another preparation of similar character is an oxy-phosphate of zinc, but it is unnecessary to prolong the list.

As a rule, the patient must leave the selection of the materials to be used to the judgment of the dentist whom he employs.

If one is obliged to employ the services of a dentist of inferior attainments, it is far safer to have some of the commoner materials

used in preference to gold, among which the much-despised amalgam has proved the most durable, and has saved for usefulness for a lifetime millions of teeth.

As soon as a tooth is discovered to be decayed, it is unwise to postpone filling until the cavity becomes larger; it not only costs more, but there is much danger of the nerve becoming exposed, ulceration at the root and a train of evils following.

When decay has progressed so far as to reach the nerve or pulp of the tooth, severe pain is liable at any time to follow.

For temporary treatment to ease such pain, a small pledget of cotton lint—smaller than the cavity—dipped in creasote, oil of cloves, oil of peppermint, carbolic acid, laudanum, or chloroform, and placed gently in the cavity, will generally produce the result.

Extraction of Teeth.—"Dead teeth and roots are frequently kept in the mouth under the impression that they prevent the check falling. When the front teeth are lost the lip falls, but it would be impossible to detect from the appearance of the face that a posterior tooth had been removed. This objection to the removal of a tooth or roots is therefore less puerile than mistaken; it may serve for an excuse, but it never can constitute an intelligent reason; and for a patient to endure the pain and baneful contingencies of diseased teeth on this account is folly in the extreme.

"Even if the loss of a diseased tooth were slightly apparent, the author thinks that its deleterious effects on the health would, in many cases, give the face a more sunken appearance than would result from its loss. When several of the posterior teeth have been lost there may possibly be some appearance of it in the face; but this is nothing in comparison to the evils resulting from the presence of so many decaying and dead teeth in the mouth."

No one should now be afraid to visit the dentist on account of fear of pain. By the aid of nitrous oxide ("laughing-gas"), ether, and chloroform it is now possible to extract teeth without any pain whatever. The laughing-gas can certainly be taken with very little risk indeed. I have never yet seen any bad effects from it, though I have seen it given to quite young children, and adults in comparatively delicate health.

"TARTAR ON TEETH.

"This is a deposit almost wholly composed of lime and animal matter, in various proportions, frequently found upon the teeth. Its source and mode of deposit are uncertain. Dr. Harris gives an excellent summary of what is known on this subject, and declares

that 'the conclusion appears to us irresistible, that this earthy matter is chiefly a salivary deposit, and takes place in the following manner: It is precipitated from the saliva as this fluid enters the month upon the surface of the teeth, opposite the openings in the ducts, from which it is poured. To this its particles become agglutinated by the mucus always found in greater or less quantity upon them. Particle after particle is deposited, until it sometimes accumulates in such quantities that nearly all the teeth are almost entirely encrusted with it.' When first deposited, tartar is soft and creamy in its appearance; but if allowed to remain, it loses a portion of its animal matter and water, and, as the lime predominates in its composition, becomes harder, and clings with great tenacity to the teeth.

"The adhesion of the tartar to the teeth does not directly induce decay; but indirectly, through the irritation of the gums which it occasions, it greatly promotes this malady. The deposit of tartar usually commences on the teeth at the edges of the gums. While soft it does not much interfere with these structures, but as it gets harder the gums are irritated and become inflamed."

Tartar is very insidious in its encroachments; as it accumulates the gums and the bony walls about the roots of the teeth recede, until it is not an uncommon occurrence to find the root or roots of the teeth entirely divested of their natural covering and the teeth fall out.

In many instances this is the sole cause of the dropping out of the teeth of elderly people, and which might have been prevented by the timely removal of the objectionable collection.

ARTIFICIAL TEETH.

This article would be incomplete without some reference to artificial teeth.

The very prevalent idea that artificial teeth are as good or better than the natural ones, and therefore that there is no need of spending time or money on the natural ones to keep them from decay, because when gone artificial ones can be obtained to replace them, cannot be too strongly condemned. Such an idea originates with lazy people, neglectful of their own cleanliness, who find it too much trouble to keep their teeth clean and too much trouble and expense to have them cared for by a dentist, and so they argue that it is cheaper and better to let the natural ones go to decay, extract them and get a new set of artificial ones, which they say will last a lifetime. Artificial teeth will not last a lifetime.

The average length of time which they are worn without renewal is but a few years. This results from several causes: the perishable nature of the materials used, ordinary wear and tear, liability to accidents; but more than all, to the constant shrinkage of the gum, which goes on to some extent as long as life lasts, and thus the plate loses its adaptation and usefulness. On the score of economy alone it is a mistake to resort to artificial teeth.

The results of this mistaken policy are seen all over the land in the mouths of young people, even before maturity, filled with wretched specimens of the tooth carpenter's craft.

Let it be borne in mind that there is no comparison in comfort or usefulness between natural teeth and artificial ones.

A month half full of even ugly teeth, if they be free from disease, is infinitely to be preferred to the handsomest artificial teeth ever made. A month full of decayed teeth, if they are such as can be preserved from further decay by filling, is better than all artificial teeth. Only those who have been habitually neglectful of their own teeth and never remember a comfortable day with them will maintain the contrary.

Unfortunately teeth are lost in many cases where there is no want of care, but dentistry is able to supply a better substitute than can be furnished for any other important organ of the human system.

Artificial teeth are made to replace the loss of a single tooth or any number up to the limit of a whole denture.

The teeth are made of a kind of porcelain—that is, a mixture of quartz, feldspar, kaolin, and the proper coloring matter.

These minerals are ground fine, worked into a plastic mass, the teeth molded and fused in a furnace. For use they are arranged upon a plate fitted to the month, and sustained sometimes by attachments to adjoining natural teeth, or in the absence of any teeth by suction to the upper gum, and by their own weight upon the lower.

The plates which form the base may be of gold, silver, platina, tin, aluminium, vulcanized rubber, or celluloid.

Each one of these materials finds its place and its advocates, but they are not all equally desirable, either in durability, comfort, cleanliness, or health.

Gold and platina rank first because of their strength and purity. They are not acted upon by the fluids of the month, and a strong, delicate, and artistic piece of workmanship can be made from them. With very little care such a set of teeth can be kept sweet, clean, and free from all odor.

The objections to gold or platina lie only in case of full upper sets, generally for elderly persons when long teeth have to be added, which, together with an artificial gum, make a set of great weight and liable to overcome the suction. Excessive weight is an objection in upper sets, but has no disadvantage in lower ones. Therefore the material which might be the best for a lower set might be the worst for an upper one.

In nearly all cases save those named above, gold or platina is much the best for either partial or full upper dentures.

Silver possesses some of the advantages of gold or platina, and is much cheaper. The objection to it is, it is not as strong, not as durable, and not so easily kept clean.

It discolors readily, and in time is eaten up by the acid secretions of the mouth.

Since the discovery of vulcanite, or hard rubber, it has been extensively used as a base for artificial teeth. Its popularity has come from the ease with which an unskilful dentist could put together a useful set of teeth upon it, and its consequent cheapness.

Its advantages lie in the readiness with which a fit can be obtained, and, when not too clumsy or bungling, in its being lighter than any metal, and thus admirably adapted to make sets for the upper jaw.

The objections to it are that it is brittle, and except when great thickness is used it is wanting in strength, continually liable to break down, impossible to repair and make as good as new, and being a non-conductor has a constant tendency to inflame the gums, making them soft and spongy, besides the almost impossibility of keeping it sweet and clean. The advantage which it possesses in its lightness for an upper set makes it equally objectionable in most cases for a lower one.

Recently celluloid has become a rival of vulcanite. Celluloid is a preparation of vegetable fibre of about the same strength, elasticity, and durability as vulcanite, and as easily worked.

The only advantage which it thus far seems to possess over vulcanite is in its translucency and color, which is a close imitation of the natural gum, but this is offset again by the fact that in a little time it loses this advantage. It is open to the same objections as vulcanite in the difficulty of keeping it clean.

Aluminium is rarely used. It possesses an advantage over other metals in being the lightest of all known metals, but the experience with it in dentistry has not been sufficient to justify any general use.

Tin is a very valuable metal as a base for teeth, especially for full lower sets.

It is a pure metal, not easily oxidized, readily worked, and quite durable.

For a lower set, when economy is necessary, it has advantages over any other material.

It is strong, readily repaired, and can be kept clean without difficulty.

Artificial teeth require more care than they commonly receive, and so does the mouth while they are being worn. The idea that as soon as the natural teeth are gone and replaced by artificial ones all care is at an end is a fallacious one.

They require more care to keep them sweet and the gums healthy than the natural teeth would have demanded from the same person.

They ought not to be worn night and day.

Any suction plate, whether full or partial, will injure the roof of the mouth sooner or later if constantly worn. No appliance could be worn in air-tight contact with any part of the human organization continuously for months and years without producing injurious absorption. In the mouth the gums become inflamed, spongy, and diseased, as the result of such contact.

This state of things is aggravated by want of cleanliness on the part of the patient.

Simply rinsing off a set of teeth does not make them clean. Particles of food will accumulate upon a plate and in the crevices, and within a few hours ferment and become foul, and nothing but a liberal scrubbing with a brush, and often some alkaline wash, will sweeten them.

With small plates clasped to adjoining teeth constant care is needed to keep the inside of the clasps absolutely clean, and also the natural teeth which the clasps surround, or the teeth will rapidly decay.

The plates which are least liable to do injury to the gums are gold and platina, and those which are most injurious are vulcanite. There are three reasons for this objection to vulcanite, viz.: the character of the material, the workmanship, and the lack of care. The first is inherent and unavoidable; the second shows itself in all cheap work: the surface which comes in contact with the gum is left rough and unfinished, and this aggravates the last cause, which lies with the wearer.

Out of many thousands of sets of teeth on rubber base which the writer has seen, as they were taken from the mouth, he does not remember but one which was scrupulously clean and free from foul odor.

On retiring at night all artificial teeth on plates should be removed from the mouth and thoroughly brushed with soap and water, followed by a brushing with pulverized chalk. They may then be placed in a glass of water to which a little common soda has been added, and left until needed in the morning.

Teeth should also be removed and brushed after each meal, if the wearer desires to meet his associates without a foul breath.

If the gums are inclined to be spongy, wet the ball of the thumb with tincture of myrrh, and rub all the spongy surface daily until they become harder.

By this process the suction of an upper plate will be benefited.

Some things which have not been referred to more fully may be summed up in a few aphorisms.

Do not have sound teeth extracted to make way for artificial ones.

One, two, or three sound teeth left will be worth more in mastication than all the artificial ones.

One or more sound teeth in front on the lower jaw will be invaluable in steadying an artificial set.

Good taste requires that artificial teeth should be as inconspicuous as possible; therefore,

“Pretty,” “white,” “small,” “even” artificial teeth in the mouth, as age advances, are unnatural and unbecoming.

One of the crowning glories of dentistry, as an art, is its power to make masticating organs so scientifically adjusted that they fulfil the functions of the natural ones, and restore to the features that charm of expression which is the only attraction in any face, and do this without betraying the art which accomplishes this wonderful result.

TEETHING—DENTITION

When the first teeth are about to pierce the gums a certain train of symptoms usually occurs; these may be briefly noticed in order that they may not be mistaken for disordered actions; the edges of the gum where the tooth is about to come through presents a slight ridge or eminence; the infant becomes a little uneasy at night, cries frequently, and carries its fingers to the mouth; the point of the gum just above the tooth now becomes red and sore; it softens, then is covered with a white point, and at length the crown of the tooth makes its appearance.

While the symptoms which accompany dentition are of the local and mild character just described, the process may be regarded as natural. In many cases, however, the symptoms accom-

panying the eruption of the milk teeth are much more severe; the child is more or less feverish; the digestive organs are deranged, and vomiting or diarrhea supervene; finally the local irritation in the mouth may extend to the nervous system, and excite either general convulsions or an almost endless variety of nervous disorders.

I shall examine each of these affections successively.

One of the most common effects of difficult teething is sympathetic fever; the febrile symptoms occur with various degrees of intensity, in some cases being very slight, in others extremely severe. Slight feverish action need excite little apprehension; but when the skin is very hot, when the child becomes exceedingly restless and refuses to take the breast, we must not neglect the sympathetic disturbance of the vascular system, lest dangerous consequences follow. As a general rule, it may be stated that, whenever any *serious* accidents accompany the eruption of the teeth, we should have recourse to the simple but efficacious operation of *lancing* the gums; this may be done with a gun-lancet or even a common penknife, the edge of the instrument being placed over the point where the tooth is about to come through; a cut may be made until the blade is felt to grate against the edge of the tooth. The operation may be repeated three, four, or even six times, on every alternate day, should circumstances require. To calm the general disturbance, tepid baths will be found useful, and the bowels may be opened with *manna*, the *syrup of senna*, or a few grains of calomel. No one who is not a physician should on any account administer *opium* by itself to infants of tender age.

The febrile disturbance now alluded to is often accompanied by *diarrhea*, or looseness of the bowels; this may be considered as the most frequent accident of teething. When the diarrhea does not last beyond four or five days, it is attended with no danger; but in many cases the looseness continues beyond this period, and is increased at the appearance of each new tooth; the child occasionally vomits up its food; the face assumes an unhealthy, dull, and leaden look; the flesh wastes away; and the little patient may be suddenly cut off by convulsions, or perish in a state of great exhaustion and debility.

Far from considering, then, the diarrhea which accompanies teething as an useful flux that should not be interfered with, we are of opinion that it should be restrained whenever the looseness continues beyond a few days, or seems to affect, even in a slight



J. Macdonald

MOIST TETTER (*Eczema*)

From Photographs of Skin Diseases taken from Life under the direction of Geo Henry Fox M.D

E. B. TREAT N. Y. PUBLISHER



SCALY TETTER (*Psoriasis*)

From Photographs of Skin Diseases taken from Life under the direction of Geo Henry Fox M.D

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degree, the general health of the infant. Lancing the gums must be had recourse to here, as in the former case; the state of the skin, which in old cases of this kind is generally dry and hard, must be improved by the use of the tepid bath twice a week. Should the looseness be attended with any signs of inflammation about the abdomen, then we must endeavor to remove this state, without reducing too much the strength of our little patient; warm fomentations may be applied to the belly; small doses of *ipecacuan* (two grains every three or four hours) may be given, unless vomiting accompany the diarrhea. The *bromide of potassium*, or *pepsin*, or the *subnitrate of bismuth* may be given in the proper doses, according to the age of the child. (See Diarrhea.)

Vomiting generally arises from sympathetic irritation of the stomach; it can only be relieved by removing the irritation of the gums on which it depends; this may be done by the means already pointed out; and the same laxative medicines should be administered (unless diarrhea exists), and the quantity of food given in the twenty-four hours must be diminished. *Oxalate of cerium* may be given for the vomiting—a very little, dry on the tongue.

But the most dangerous affection to which children are subject during the period of teething is convulsions. The severity of the symptoms connected with the nervous system is extremely various; in some cases we have nothing but an undue degree of sleepiness; in others the effects on the general condition of the nervous system are shown by restlessness, want of sleep, starting in the sleep, flushing of the face, partial paralysis, squinting, irregular movements of the muscles; in a word, by an almost endless variety of nervous disorders. Thus, irregular motions similar to St. Vitus's dance are often connected with difficult teething. (See Convulsions.)

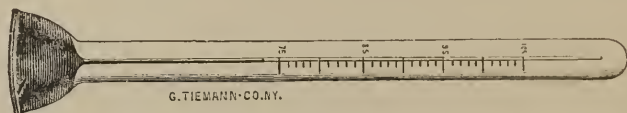
TETANUS. (See Locked Jaw.)

TETTER.

There are two diseases of the skin known as tetter. One is always dry (*Psoriasis*, see Plate XI.); the other, though dry at certain times, is usually moist in its early stage and always shows a tendency to weep or discharge (*Eczema*, see Plate XI.).

THERMOMETER IN MEDICINE.

The thermometer is now much used in the study of disease. There are different varieties constructed expressly for medical use. The best form is the *self-registering axilla thermometer*. In order to test the temperature of the patient the bulb of the thermometer should be kept in the armpit (axilla) from three to five minutes.

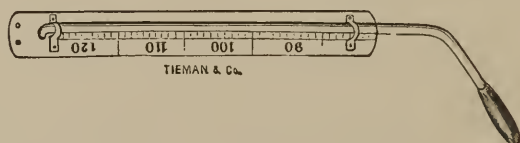


SEGUIN'S SURFACE THERMOMETER.

In health the temperature in the armpit should be 98.4° or 98.5° Fahrenheit. It ranges between 92° and 100° . It is higher in the tropics than in cold regions by a degree. It is higher in children than in adults by one or two degrees. *This temperature is variously modified by disease.* Hence the value of the thermometer.

In scarlet fever the temperature rises to 108° , 110° , or 112° ; in lung fever and typhoid it rises to 104° , 105° .

The temperature varies from day to day in many diseases, and with the hour of the day. Hence physicians who are accustomed



AITKEN'S FEVER THERMOMETER.

to use the thermometer can, by its aid, determine the character of the disease and its progress for better or for worse from day to day.

TIC-DOULOUREUX, OR NEURALGIA OF THE FACE.

Tic-douloureux is the term usually applied to a painful affection of certain nerves of the face. It may be seated in one of the temples, at the side of the nose, under the eye, or in the gums; sometimes the pain attacks one side of the head and face, and may extend to the eye or ear. But although this affection is for the most part confined to the face, it may nevertheless attack the extremities of the body, the female breast, the liver, the womb, or any other internal organ, and has in many instances been known to follow

diseases of the skin; for example, it frequently succeeds the disorder called shingles, before described.

Symptoms.—The pain comes on in paroxysms, is of a peculiar kind, and differs from that which accompanies inflammation. The patient describes it as being lancinating, stabbing, sudden, and excruciating. In severe cases the pain is increased by the slightest touch, shaking of the room, or even by blowing upon the part, or by the least bodily exertion; and, when constant, delirium is sometimes the consequence. In some instances convulsive twitchings of the face are observed, and the tears are seen to run down the cheeks. There is perhaps no disease to which the human frame is liable, accompanied with more intense suffering than that which results from the more severe forms of tic-douloureux. The attacks at first are comparatively mild, do not occur frequently, nor continue long; but when the disease is confirmed they last for days, weeks, or even months, and may recur after very irregular intervals, without the slightest warning or any apparent cause; and it is worthy of remark, that although the long duration or constant return of severe pain may render the patient's existence a wretched burden, yet it appears to have very little effect abridging the period of life.

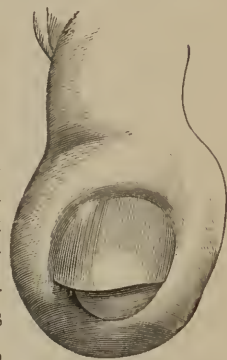
Tic-douloureux, whether seated in the face or in any external or internal part or organ of the body, is distinguished from inflammatory disorders by the sudden manner in which it appears and disappears—the absence of swelling, redness, heat of the part, and, in a word, of all the symptoms which characterize inflammation, with the exception of pain. It ought, however, to be observed that in persons of an irritable habit of body the violence of the pain sometimes occasions a greater or less degree of febrile excitement. Of the *causes* of this disease we *know* nothing. But often a decayed tooth, or a disordered state of stomach and bowels, or general debility, may act as *exciting* causes.

Treatment.—Tic-douloureux is to be treated like neuralgia of any other part of the body. Small blisters on the track of the painful vein may do good, also galvanization and faradization. Physicians have been using of late for a very powerful remedy *aconitia*, beginning with doses of $\frac{1}{200}$ of a grain and gradually increasing until poisonous effects—general tingling and numbness—are produced. In this way severe cases have been cured. It is not, however, a remedy for family use.

TOE-NAIL, INGROWING OR INVERTED.

This affection is sometimes exceedingly painful, and may cause great distress. Sometimes the edges of the nail sink into the flesh and cause inflammation and ulceration. The disease is caused by wearing tight boots.

Treatment.—The best *treatment* is to scrape the nail very thin indeed with a bit of glass. The earlier this treatment is resorted to the better. Next press some bits of cotton wool beneath the nail, so as to separate it from the inflamed and chafed flesh. This treatment will usually give relief. It may be necessary to remove the nail in certain cases, but this operation is not advised by physicians so much as formerly. If actual ulceration has taken place, the best treatment will be the strips of adhesive plaster firmly applied over the toe. (See Ulcers.)



INGROWING TOE-NAIL.

TONGUE-TIE.

Infants who cannot or do not suck readily are frequently called tongue-tied, and the physician is asked to divide the *frænum* below the tongue in order to cure. It is proper to say that this malady usually exists in the *imagination of the nurse*. The cases where the tongue needs to be liberated in this way are very rare indeed. *If the tongue can be put out of the mouth beyond the lips, or can touch the palate, no operation is necessary.*

The operation, although apparently slight, should never be undertaken by any one who is not familiar with the anatomy of the parts.

TONSILS (*Tonsillitis*), DISEASES OF THE. (See Quinsy.)

TUMORS—SWELLINGS.

Tumor is a word of somewhat indefinite meaning. It includes mother's marks, goitres, fibroids, cystics, and all forms of cancers. It is used to describe almost any kind of swelling on the body. The popular notion that a tumor is always a cancer or malignant growth is a mistaken one. There are, in fact, two kinds of tumors—benign and malignant, or cancer (see Cancers). Innocent or benign tumors may occur in almost any part of the body, and

when removed by any operation they do not recur. An *aneurism* is a kind of tumor (see Aneurism). Malignant tumors, on the other hand, are very liable to recur after being operated on.

TRANCE—SOMNAMBULISM—CATALEPSY—ECSTASY —HYPNOTISM—"ANIMAL MAGNETISM."

Trance is a disease of the nervous system in which the activity of the brain is concentrated in a limited region, the activity of the rest of the brain being for the time suspended.

This explanation, which I first published a number of years ago, accounts for and harmonizes all the phenomena of trance in all its phases and manifestations, and however induced.

An illustration that I frequently use is the following :

When all the burners of a chandelier are lighted and the gas is turned on full, that is the normal waking state; when all of the burners are turned down low, but no one is turned quite out, that is ordinary sleep; when all of the burners are turned out entirely *except one*, and that one burns all the brighter from increased pressure, that is trance.

Trance differs from ordinary sleep in these five general features, as well as various special features to be hereafter noted under symptoms :

1. The trance subject acts out his dream, while in sleep the dream does not cause any corresponding coherent physical phenomena.

2. The performances of the trance are logical, coherent, and consistent; while dreams are filled with extravagance and absurdities which to the sleeper seem entirely proper.

3. In trance, some of the senses are perfectly sealed. The loudest noises are not heard, the most fragrant odors are not observed, and there is no power of taste. While some of the senses are thus utterly closed others may be greatly exalted. On the other hand, the soundest sleepers are awakened by loud noises, or by sufficiently irritating the sensitive nerves.

4. Trance subjects are capable of responding to suggestions offered by a second party, or from any external source, and become consciously obedient to those suggestions. Sleepers present no such peculiarity; if they respond to external suggestions addressed to the senses, it is automatically and not consciously or coherently.

5. In some forms of trance there may be divided or double consciousness. The subject, on coming out of the trance, has no recol-

lection of his experience while in it. On again entering the trance he resumes the experience of the previous attack where it left off, as though no active life had intervened.

In strictness, trance is not sleep at all; it is rather another form of waking life, over which the will has little or no influence. It does not rest one, rather it is exhausting, at least in some of its phases, and with reason, for the mental and physical functions are oftentimes exalted.

Where a person asleep "acts his dream," and walks in his sleep, he may be said to pass from the state of sleep into the state of trance, which is called somnambulism, a phase of trance. The mind is passive—all the movements are automatic—the will having no influence; the senses, some of them at least, are active, and in some cases prodigiously exalted, and the subject acts in obedience to the idea of his dream or to external suggestions made through his senses, with most surprising phenomena.

Catalepsy and ecstasy are both forms of trance, the peculiarity in both being that there is fixity of position, and that there is no response to or but little response to external suggestion.

In what is called mesmerism, or hypnotism, such as is induced by the methods of Mesmer or Braid, the response to external suggestion is a marked feature. The senses are active and absolute, and the patient does whatever is suggested to him by a second party.

Symptoms.—The special symptoms of trance are various, and they vary with the individual, with the conditions under which the trance is developed.

The leading symptoms—mental and physical—as they are liable to appear in the different stages of the trance condition, may be thus classified:

First. Closing of the eyes and fixity of position, with gradual loss of volitional power.

A mesmerized subject is in the condition of one in nightmare—trying to run away from some horrid animal, it may be, yet unable to stir—but with this difference, that with the nightmare subject the suggestion is purely subjective from his own brain, and the accompanying phenomena are purely mental; while with the trance subject the suggestion is oftentimes objective and external, panied by physical manifestations.

The appearance and position of the eyes in full trance are peculiar. They are generally fixed, and turned somewhat inward and upward, and when open present a characteristic stare. The voice also may change so far as to be unrecognizable.

Secondly. Flushing of the face and eyes, with sensible and cold perspiration, and coldness of extremities. These symptoms, which come on quite early, are soonest observed in those of very sensitive organizations.

Thirdly. Sighing respiration and rapid pulse, with evidences of oppression and pain. When sighing respiration appears we may know that the subject is beginning to be well entranced.

During this stage the subject may sigh and groan, as if in great pain, as patients often do when under the influence of an anæsthetic. On coming out of the trance there may be no recollection of any suffering.

The preceding symptoms, which do not always appear—certainly not in their logical order—belong, most of them, to the early stage of trance before the subject loses entire control of his acts. Many subjects can never be forced beyond this stage. In this stage also the subject is conscious, more or less, and, at the suggestion of a second party, he does the most absurd things.

Fourthly. Mild or violent involuntary muscular motions. These may begin with a spasmodic motion of the arms or feet, or of both, with various jerkings and twistings of the head and body, and may go on to furious contortions, violence, and continuous running, leaping, jumping, rolling, and all manner of absurdities, which may be protracted for hours and days. To this class of symptoms belong the dancing epidemics of the middle ages, the leaping, jumping, and jerking manias of Sweden and Scotland and Kentucky, and the convulsionaries of St. Medard.

Fifthly. Involuntary mental action, with exaltation or depression of the senses and of the mental and muscular powers.

A person in a trance can perform mental and muscular feats which, in their voluntary state, are impossible; and besides, the functions of the nerves of general and special sense may be enormously exalted. There may be such an exaltation of the sense of hearing that a faint whisper in a distant room may be distinctly heard; of the sense of touch, so that when the hand of a second person is brought near to the subject its presence will be felt before it touches the body, by the increase of warmth.

Men in trance have been known to lift over their heads weights which, in voluntary state, they could not raise from the ground. Comparatively feeble women will, while in this state, dance furiously for hours and days with little fatigue, or without nourishment or rest walk consecutively for many hours each day. A young lady who is but a moderate singer, has been known, when in the trance, to sing with great effect; and many a poor talker goes off

into a fluent though senseless speech. The co-ordinating power becomes so exalted in the trance that the subject climbs giddy heights, crosses narrow beams, and appears in all sorts of perilous places, without falling or even slipping. The so-called trance-speaking illustrates the mental symptoms of this state in a very interesting way. Persons who are profoundly ignorant, who have comparatively feeble gifts of thought or speech, do exhibit in the trance a mental activity and brilliancy that is oftentimes amazing. Those mental qualities that are needed in trance-speaking—command of language, phrases, illustrations, and stock expressions of those with whom the speaker is intimate—these faculties are sometimes very greatly exalted, so that the subject speaks with a celerity and freedom at which his friends are astonished. It is observed that trance-speakers originate no great thoughts, and make no important contributions to literature; they simply repeat (as has recently been illustrated in the family of Mr. Kiddle, late superintendent of the Public Schools of New York), in a glib and voluble manner, the thoughts and phrases already in their minds, and as the majority of professional trance-speakers are of moderate or inferior ability, their sermons and speeches add nothing to the literary treasures of the world; relatively, some of these trance speeches are interesting, as showing what an ignorant and stupid person can do in the exaltations that result from the temporary triumph of the involuntary life. We are amused with them as we are amused with precocious children, whose performances are far ahead of their years though of little absolute value.

But when men of real original genius become entranced, or partially so, they oftentimes do some of their best work. Great orators may, under high excitement, become so far entranced as to be put semi-conscious, and in this state they may utter their most eloquent passages. This involuntary and exalted activity of the mind is accompanied frequently by involuntary and exalted muscular activity of various kinds; when, therefore, one goes into a trance, while holding in the hand a pencil, or with both hands on the planchette, for example, he may write, to his infinite astonishment, words and phrases long forgotten, which are not recognized even when they appear before him. Experiences of early childhood, that have long since ceased to be a part of our conscious life; prayers that fell from mothers' lips on unwilling ears; oaths and obscenity, heard or spoken in evil hours, and which we hoped had long been wiped from memory; the words of some other language, taught us by foreign nurses or teachers—all these, under passive state of the mind, when the will relaxes its grip on the brain, walk

out of the cerebral cells in which they have been long imprisoned. The spirits are indeed upon us, but they come from our own brains—the jailer has gone and left the doors unlocked, and the prisoners escape.

The five senses are quite differently affected by the trance. The sense of touch may be very greatly exalted, hence the feats of somnambulists, who go from room to room with closed eyes, avoiding whatever obstacles may come in their way. If the operator who exhibits a subject in public be disposed to do so, he can avail himself of the exaltation of the sense of hearing to perform all kinds of trickery. Those who are familiar with the tricks of those who exhibit learned dogs, pigs, etc., that play cards and do all kinds of wonderful things, are aware that the master carries with him an instrument resembling a comb, one of the projections of which, on being touched, produces a very slight sound that the bystanders cannot hear, but which the learned animal hears with ease. It is to him an order to stop—the “whoa” for a horse—and as he stops he picks up the card, or number, or object near his mouth. When the master or trainer is out of sight and hearing the learned animals are very unlearned!

Analgesia, or loss of sense of pain, sometimes called the sixth sense, very frequently appears in a trance, even when the sense of touch is greatly exalted. Thus the subject can perceive the near approach of the hand of a second party by the difference in temperature, and can distinguish the character of the object by touch alone, but a needle thrust into the calf or the leg causes no pain. This same condition is observed in some diseases of the spinal cord, but there is not usually any exaltation of the sense of touch.

Dr. Brown-Séquard gives this extraordinary case of balancing while in a trance state: A young lady of Paris was every Sunday, at ten o'clock, seized with ecstasies. When this attack came on she would get upon a bed, put her toes on the edge, take an attitude of prayer, and begin to pray to the Virgin Mary. In this position she would stay for a long time, fixed like a statue, her chest moving, her heart beating, but her lips uttering sounds, and the rest of the body absolutely still. To stand on tip-toe, on level ground, even without shoes, is very difficult, and for any length of time impossible.

Sixthly. Illusions and hallucinations of various kinds.

Hallucinations can appear in those who are not entranced, for they depend on a vast variety of cerebral conditions; but of the different forms of trance they are frequent accompaniments, and, in

connection with other symptoms and the surrounding circumstances, help to make out the diagnosis.

In the mesmeric form of trance the subject can be made to see and hear anything that the operator suggests. A pillow may be transformed into a dog, a book into a baby, a lead-pencil into a mouse, a bottle of ink into a cat running after it.

Spiritual mediums in all ages have availed themselves of these phenomena of the trance to delude their victims. They partially or wholly entrance their poor, sensitive, credulous attendants on the séances by the combined influence of expectancy, awe, music, and darkness, and compel them to see and hear whatever they wish. Under these circumstances, hallucinations can be made to appear even to those who are but slightly entranced. They may be indeed the very first symptoms of the trance state, particularly in those cases where lights, flashes, flowers, and forms are expected to be seen.

Sensitive temperaments, who are liable to fall into the trance on slight provocation, frequently see full forms of the living or the dead, even when other marked symptoms of trance are not apparent; but usually an expert would detect that the subject was in the trance by other symptoms and without the confirmatory evidence of the hallucinations.

Seventhly. Various hysterical symptoms.

Among these symptoms are tingling, feeling of pins and needles, numbness, heaviness, creeping, crawling, and allied sensations that are so common in hysteria. This is variously described as a shock or thrill resembling that caused by electricity. A man who has much experience in tipping tables, tells me that a sensation of this kind is almost always felt by him very soon after his hands are in position on the table. To those who have not looked into this matter, the ease with which sensations of this kind can be excited is incredible.

Eighthly. Profound sleep with protracted suspension or diminution of active vital functions.

Burying alive.—In the deeper stages of trance all or nearly all the active vital functions may be suspended for long periods; the subject is alive, but he does not live. The remarkable case of Townsend is a familiar illustration. This man could at will throw himself into a condition of apparent death, in which state medical experts could find no pulse and no respiration, and feared that he was really dead. But in time the heart renewed its beating, and he was restored to his ordinary state. The heart was probably beating, but not audibly. It is said of the Fakirs, a religious

sect of India, that they throw themselves into a perfect trance, and suffer themselves, while in this state, to be shut up in coffins and to be buried for days and weeks. The evidence on this subject, of the trance of the Fakirs, is not, to my mind, satisfactory. Sleep may occur early in a trance, and in many cases it never occurs; it is but one of the many evidences of the trance state, and is not essential to it. It may, and often does, follow the stage of violent muscular and mental activity. In some cases this sleep will continue for hours and days, unless the subject is awakened. Sleep is also an accompaniment of the previous symptoms, though when there is violent activity of mind and muscles there cannot of course be profound sleep.

In the deepest stages of trance, as illustrated in those who have come near being buried alive, the sense of hearing may be active, but the power of speech, or motion of any kind, is lost; the patient may take cognizance of the preparations going on around, and yet be powerless to resist. The diagnosis of such cases may be made by the presence of electro-muscular contractility, which always disappears a few hours after death.

Rosenthal, of Vienna, records a case of trance in an hysterical woman. She was declared dead by her physician. When Rosenthal saw her, the skin was pale and cold, the pupils contracted and not sensitive to light, no pulse could be detected, and there was relaxation of the extremities. Melted sealing-wax, dropped on the surface, caused no reflex movements. When a mirror was held before the mouth no moisture appeared. It was not possible to hear any respiratory murmurs, but in the cardiac region a feeble intermittent sound could be just detected on auscultation. The patient had been apparently dead for thirty-two hours. On examining the patient with the faradic current of electricity, Rosenthal found that the muscles of the face and extremities contracted. After twelve hours of faradization, she recovered. Two years afterward she was alive and well, and told Rosenthal that about the commencement of the attack she knew nothing, but that afterward she heard people talk about her death, but she was powerless to help herself.

Double or divided consciousness.—An interesting fact of the trance is the continuity of existence from one attack to another. At the beginning of an attack the subject may go on doing the same things as in the previous attack—may indeed begin just where he left off before, although the interval between the attacks may have been a very long one. The voluntary life is indeed ignored, and the involuntary life proceeds as though the individual led no other.

A very remarkable case of double consciousness is that of Miss Reynolds, the particulars of which were recorded in 1860, and accounts of which had previously appeared in various journals. This lady, who lived in Pennsylvania, was attacked at the age of eighteen by some form of convulsions. After one of her attacks she was found one morning in a deep sleep, from which she could not be aroused. When she awoke spontaneously after some hours, she had forgotten all about her former life; all her acquirements had passed from her. She knew not her father, mother, brother or sister. She had no consciousness of having previously existed. Five weeks she continued in this state, and then recovered her natural state and her memory returned, but no recollection of her long state of trance. She took up life where it was when she entered into the trance. She afterward fell into the trance again, and in that state again forgot the experience of her natural state, and only remembered the little she had acquired in her previous trance. These alternations, from one state to another, continued until she was about thirty-five years of age, when she fell permanently into the second state; she thus lived two separate lives.

An important fact in regard to trance is that the first attack is usually the type of all the subsequent attacks in general and special features. One who at first makes a trance speech will be likely to do the same in subsequent attacks; the same with one who moves tables by unconscious muscular motion. Similarly with the exaltation of special senses, one who is put into the trance, by suggestion of a second party, acts in obedience to the suggestion of that party ever afterward succumbs more easily to the influence of that person than to a stranger.

In the trance, as in the voluntary life, practice makes perfect. He who has had much experience in entering the trance finds it easier and easier—less time is required to develop the earlier symptoms, and he goes further into the state. Hence those who at first simply exhibit under the “mesmerizer” the feature of closing the eyes, with inability to open them, and of inability to close the hand or bend the arm, when the person with whom they are *en rapport* tells them that they cannot, and who are all the time more or less conscious, may go on to the profound stage—both mental and physical—where they are unable to resist the suggestion of the operator in any feature.

Relation of trance to modern delusions.—In regard to the stupendous claims that have been and are continually made, in connection with the trance, natural or artificial, that the subjects

possess clairvoyant powers, and by virtue of that can see through the bodies of patients and diagnosticate diseases; predict the future, or describe the past history of those with whom they are *en rapport*; correctly narrate events of importance taking place thousands of miles away; that if the different points on the surface of the head be touched by the finger of the operator, while the subject is in this state, emotions corresponding to the phrenological organs supposed to be beneath that region will be exhibited by the subject; that the subject is at the mercy of the silent will of the operator—all these marvels of clairvoyance, prevision, lucidity, sympathy, prophecy, second-sight, and thought-reading, as well as the very frequent claims of seeing with closed eyes, of reading through the pit of the stomach and with the ends of the fingers, or telling time through the back of the head—all these claims of the birth of a new sense or faculty in the trance, or the transference of senses or faculties in this state, as well as the general theory of animal magnetism, or of the existence of a magnetic fluid, or of a new force that passes from the operator to the subject—all of these claims have all the presumption against them, and, up to the present time, no experts have brought forward any evidence to overcome this presumption; indeed science now knows that these claims are false.

Human testimony, filling many volumes, can be found in favor of the wildest of these claims; but on these, as in all other scientific themes, the average human testimony is worth nothing, except to illustrate human ignorance. Authorities in other branches of science even are worth nothing here. It has been shown, over and over, that eminent chemists, astronomers, naturalists, and even physicians who have not specially studied the subject, make worse blunders in investigations of this kind than common laborers.

The testimony in favor of witchcraft is incomparably more imposing than that in favor of any of these claims. In all experiments, even on organic substances, there are numerous sources of error which must be guarded against if we would have the experiments of any value, and the conclusions from them accepted; indeed, the difference between experts and non-experts, in any realm of science, consists largely in the success with which they meet and overcome, and allow for errors in their experiments, and in their power of correct generalization from their experiments. In experimenting with dead or living animals, in the laboratory, the sources of error are far more numerous than in experimenting with inorganic substances; therefore it is that, in this department, the conclusions of the ablest experts are not accepted until they

have been confirmed by many others. Hence the justice of the statement attributed to the late Prof. Jefferies Wyman, "In physiology, a single experiment is worth nothing." In dealing with living human beings who lay claim to occult and divine powers the complications thicken, and sources of error multiply in geometrical proportion. Hence the almost absolute valuelessness of the literature of animal magnetism. From the days of Mesmer until now, not more than two or three experts in this department of inquiry have appeared.

Aside from general precautions, subjective and objective, that all experimental research demands, the special sources of error to be guarded against in investigations of claims of this sort are the following: 1. Intentional deception on the part of the subject. 2. Unintentional deception on the part of the subject. 3. Intentional collusion of confederates. 4. Unintentional collusion of bystanders. 5. Guess-work and coincidences. 6. The phenomena of the involuntary life and of diseased states of the nervous system.

Any experiments with professed clairvoyants or mediums, in which all these sources of error are not avoided or allowed for, are of no value to science, and cannot be received. Even if all the errors that may arise from these six sources are provided for, the conclusions from these experiments, if contrary to presumption, cannot be accepted until they have been verified again and again by other experts. In all experimental inquiries, conclusions against presumptions of experts can only be received after full and repeated verification. In this department verification is all the more imperative, from the fact that the sources of error are more subtle. The best credential of an expert in this department is the ability to see, to avoid, or to allow for errors from all these sources. This is a credential that scarcely any of the authors on this subject have been able to furnish. Some have guarded against a portion of these errors, but not against all. Some have guarded against all, perhaps, but one or two, and for want of completeness in some one direction, the entire fabric of their conclusions falls to the ground. For here, especially, is it true that to be guilty of one omission is to be guilty of all. I assert with absolute positiveness that none of these stupendous claims are founded in fact; that the myriad recorders of clairvoyance, mind and thought reading, prescience, retrovision and second-sight, odic and psychic force, in trance or out of trance, would never have been heard of but for the non-expertness of writers and experimenters; that these claims, under the eye of the expert, are hollow, empty and transparent; and

further, I assert that to the expert there is, in this whole subject, no mystery whatever, save the general and universal mystery that surrounds all existence. I am fully aware that, in making this absolute assertion, I stand for the present almost if not quite alone. I do not ignore the fact that the human race, savage, barbarian, and civilized, have almost unanimously believed in these claims, and that to-day among the more thoughtful classes who long since renounced or have out-grown alchemy and spiritualism, witchcraft and astrology, practising clairvoyants reap their best harvests; and that, even among the best-educated physicians, the belief in the reality of clairvoyance, animal magnetism, and mind-reading is slow in dying out. In regard to all these claims, it may be conceded at once that none of them are theoretically impossible. Our existence is a greater mystery than the wildest assertions clairvoyants or mediums ever made. We might have been made with wings, so as to fly through space from star to star, but we are not so made, and without examining into the history of every human creature, we yet know, as well as it is possible for mortals to know anything, that no one here takes such a flight. Similarly, it is now known to experts, and will in time be known to all reasoning creatures, that no one has ever read minds, predicted the future, seen into the past, or possessed any odic or psychic force. What is true of clairvoyance and allied delusions, is also true of the claims of witchcraft and spiritualism. When the hand of the expert touches them they vanish into air. Here, as in all branches of science, expert skill is everything; honesty and general ability and attainments as such count for nothing. Powerfully this appears in the report of the second committee of the French Academy; worse experiments, in the name of science, were never made, and very properly the report has not commanded respect. Here it is interesting to note that none of the committees ever fully solved the problem of mesmerism or animal magnetism. They found out what it was not; they did not find out what it was. The history of these delusions is marked by the labors of many able, honest non-experts, among whom Reichenbach, Olcott, Owen, Elliotson, Gregory, Hare, Crookes, Wallace, Cox, and some of the members of the scientific faculty of Yale, are most conspicuous. It cannot be too often repeated that the phenomena of trance and of the involuntary life of which trance is a part, can be studied with success only by those who are profoundly and acknowledgedly versed in the physiology and pathology of the nervous system. The blunders that mark the history of this science have been made by great chemists, statesmen, lawyers, judges, astronomers, physicists, and

naturalists. It is from the ranks of neurologists—students of the nervous system in health and disease—that the experts in this branch must come, and in proportion as experts are developed, and as a knowledge of their conclusions becomes diffused, in that proportion will all these wondrous claims disappear from the civilized world.

Predisposing causes.—All other conditions being the same, those are most predisposed to the different varieties of trance who are physically of a nervous and mentally of an imaginative and credulous temperament. Poor health and feeble constitution, as has been supposed, are not necessary elements. Women are, on the whole, rather more susceptible than men. All ages, from infancy to extreme old age, are susceptible; but the very young are not so susceptible as those between ten and twenty.

Hysterical persons, as a rule, are more easily entranced than those who are not hysterical; but a person may go through all the stages of hysteria without being in any sense entranced.

Some are insensible to the emotions of reverence or wonder, but are quite susceptible to fear, and can readily be entranced by it; and there are elements of terror that few can withstand. Thus Rev. Dr. Buckley, who has studied medicine, and who has given very many public lectures on trance, and performed publicly numerous experiments in so-called mesmerism, informs me that, on one occasion, while preaching, he became entranced, and stood for fifteen minutes in that state, unconscious of what he was doing. He came out of the trance before his sermon was over, and resumed his usual manner. Of what he said, and how he said it, during these fifteen minutes, he had no recollection, but his hearers declared that he was then unwontedly eloquent, and spoke with extraordinary fervor, so that, what was unusual under his preaching, a large number were affected seriously on the spot, and came up to the anxious-seat.

This same gentleman informs me that a well-known clergyman, at the time of the great preaching epidemic in Kentucky, went out there, in company with a friend, to investigate the phenomena, and both, on witnessing the contortions and hearing the cries of the victims, were themselves quickly taken down with the very jerking symptoms that they had come to investigate.

At one time Dupotet, the French apostle of animal magnetism in England, was giving a public lecture on his favorite theme, when a skeptic arose in the audience and declared that he could not mesmerize him, whatever he might do with others. "This moment thou shalt feel my power!" shouted Dupotet, raising his

arm and pointing at the skeptic, who involuntarily became affected. In physiology there is a limit to the power of the will; in the strongest natures there is a limit of strength, on passing which they may act after the manner of the weak and cowardly.

Exciting causes.—The causes or influences which give rise to the trance are capable of a general classification. It will be seen that the different varieties of trance have received their names from the manner of their development, or from some prominent symptoms. In our ignorance of mental physiology and pathology it has been necessary to do this, just as in the case of many diseases. Thus epilepsy is named from the single symptom of falling; hysteria is simply an endorsement of the now rejected theory that the disease originates in the uterus; neuralgia means simply pain in the nerve, and gives no clue to the real pathology of which the nerve-pain is a symptom. Hay fever is a term that will not soon die, although hay is but one of perhaps twenty or thirty exciting causes of that malady.

On the same principle of nomenclature which, in our ignorance of the ultimate mechanism of nerve-action in health and disease, we are forced to adopt, trance may be thus subdivided:

Spontaneous trance.—The subject falls into a trance as he falls into sleep during the daytime, not only without any special exciting causes, but without any effort of his own will, even against his will. The liability to this form of trance comes from native nervous susceptibility, from injury or the use of drugs, producing a pathological state, or from certain diseases of the brain.

Under this head belong somnambulism—that is, walking in the sleep—catalepsy, ecstacy.

Self-induced trance. Some persons have the power of putting themselves into the trance state whenever they wish to do so. To this class belong the genuine trance-speaking mediums. Trance, when it appears in this and the previous form, is usually called natural somnambulism.

Emotional trance.—Under this head are included mesmerism, or hypnotism (artificial somnambulism), as well as the large class of cases where the trance is produced without the intervention of any persons, but simply through some influence that powerfully acts on the emotional nature. Mesmeric trance is derived from Mesmer, who, although a charlatan, really did some good service in calling attention to this remarkable phenomenon. His theory, and all other theories of animal magnetism, must now be abandoned, but the phenomena produced by ceremonies that he employed—passes, pressure of hands, staring—are permanent facts, but are

differently interpreted, for it is now known that the same effects can be produced spontaneously, at the wish of the subject, or by any process that displaces the will.

The time required to induce the condition of trance, through any of the various methods of fixing the attention, ranges between the fraction of a minute and half an hour; the average of time being perhaps ten or twelve minutes. Usually it is of little use to work over a subject more than half an hour.

The notion that a mesmerized subject can only be awakened by the operator under whose supposed influence he goes to sleep has no just foundation. Any one of the bystanders can awaken the subject. He will awaken himself, if left alone through some hours. So far as I can learn, there is no case where a mesmerized subject absolutely refused to awaken.

The methods of fixing the attention to induce trance can be indefinitely varied as follows:

1. The operator makes passes to and from the subject near to him, but usually not touching him. These passes may be in various directions.

2. The operator sits down before the subject, and, pressing his thumbs against those of the subject, stares him closely in the eye.

3. The operator holds some bright object a few inches above the head of the subject, forcing him to strain his eyes as he gazes at it.

4. The subject gazes fixedly at any object on the wall, at a little distance from the eye.

These two methods were adopted by Mr. Braid, of Manchester, hence the term *Braidism*, or *hypnotism*.

5. The operator stands before an audience, requests them all to rise, and to fix their gaze on him for a few minutes. A certain number of the audience will in time be hypnotized.

6. The subject sits down quietly, takes one hand in another, and controls his thoughts.

7. The subject stands quite still, in an attitude of reverence, with folded hands and closed eyes.

In all these three latter methods it is an advantage to have a number of persons tested at one time.

8. The subject holds in his hand a round or oval-shaped piece of glass, or jet, or crystal (the so-called "magic crystal"), or simply a button or piece of coin, or other object, and gazes on it.

If the subject is sufficiently susceptible and imaginative, he may in time see figures, forms, faces, and all sorts of appearances in the crystal, and the other symptoms of trance may also be de-

veloped. This was the method employed by the famous charlatans of the middle ages. The sorcerers of Egypt, it is said, made their subjects gaze at a drop of ink (a liquid mirror), at the same time using fumigation and manipulation.

9. The subject drinks water that he supposes to be magnetized. Under the influences of the imagination the water which he supposes to be magnetized will acquire at once a different taste, and thus, while drinking, he may fall into the trance. Holding any object, as a letter or book, supposed to be magnetized—a real magnet or an imitation of one—will have the same effect.

One may become entranced through the emotion of anger. Passionate natures easily lose self-control, and, under exciting causes the most trifling, may become as thoroughly entranced as though they were mesmerized, but, of course, with different manifestations. In violent fits of rage the subject sees nothing, hears nothing except what relates to the object of his resentment; he exaggerates his real or fancied cause of displeasure, and may see and hear what has no existence except in his own brain. Hence the wisdom of deferring all important action in such cases until the storm of passion has passed away.

The emotion of grief may put one into a trance. The sudden and terrible agony that follows the first news of bereavement may so thoroughly divorce the mind and will, that the unhappy subject is for the time as much at the mercy of the nearest second person as in the so-called mesmerized subject. The distracted mother, bending frantically over the form of her lost child, is oftentimes wholly under the control of her grief, her words and actions being as involuntary as her sobs and tears. How often does it happen, under such circumstances, that the afflicted wife or mother displays unwonted physical strength and endurance like those who are put into the trance state through the passes of an operator! The emotion of wonder may put one into the trance. Wonder and awe, complicated with reverence, are, for the average untrained mind, the most frequently acting of the causes that produce the trance state. Strikingly and constantly this is seen in the séances of mediums, clairvoyants and magnetizers. The emotion of reverence is so potent that very few, who for the first time enter a room where professed communications are received, are able to be as cool and as calm as though no such pretence were made. If this be true, as it is, of skeptical, strong-minded investigators, it is true all the more of weak believers in these pretentious performances; they are powerless as babes; their honesty, like their credulity, may be unlimited. But honesty is of no use to a man en-

tranced; honesty alone, unaided by the will and reason, can no more find the truth than it can take the place of the legs and run, or of the arms and fight. These tender and credulous natures, as soon as they enter the room where mediums profess to bring up the forms of departed spirits, or to communicate with them by signs that the senses can appreciate, become entranced at once—they leave their will at the door. Tests that at once occur to one in an active state, and which, if tried, would show instantly the cheapness of the trickery, are either not thought of, or if thought of, are badly used, or not at all. Under these circumstances they may go into the severe stages of the trance, so that they see whatever they are told to see, hear whatever they are told to hear, or feel whatever they think they ought to feel, and any statements they may make of what they suppose to have transpired are of about as much worth as the statements of discharged lunatics of the treatment they received while in asylum. It not unfrequently occurs at these séances that weak and believing spectators go off into the convulsions of trance, and see all manner of apparitions, and hear any variety of rappings, knockings, and other spiritual sounds. Thus, in an extempore séance at the Eddy homestead, at which I was present, one lady in the circle became convulsed, like a patient in the attack of hysteria, fell off the chair, clasping her hands nervously together, declaring she saw a spirit.

Intellectual trance.—Concentration of the reasoning powers on any one theme may induce a semi-trance state, with various physical symptoms, as fixity of position, flushing of the face, rapid pulse, cold extremities, and so forth.

The recorded cases of absence of mind in great thinkers and scholars are very interesting. Thus, of a great mathematician, it is said that he seemed for hours more like a dead person than a living, and was then wholly unconscions of everything going on around him. Joseph Scaliger was so absorbed in the study of Homer, during the massacre of St. Bartholomew, that he knew nothing of it until the following day. I have heard of a great lawyer who made an engagement to marry a lady to whom he was sincerely attached. The day of the marriage was set, and on the part of the lady all the arrangements were made, but he forgot all about it, and it did not occur to him for over a month, when he thought of his appointment and hastened to the home of his expectant bride, to find her married to one of his friends.

Effects of trance on the nervous system.—The usual effects of ordinary trance, spontaneous, or self-induced, or mesmeric, are not permanently or even temporarily injurious. In some, nervous-

ness and, very frequently, weariness follow a severe fit of trance; indeed, weariness is so constant a symptom that it is feigned almost invariably by public mediums, mind-readers, clairvoyants, and other impostors, who wish to counterfeit trance. This weariness is, however, not unlike that which follows severe active exertion, and soon passes away.

Therapeutical uses of mesmeric trance.—The therapeutical uses of mesmerism, or hypnotism, are not so important as, at first thought, it would seem they should be. Many of the results that are derived from or during mesmeric experiments are due to psychic or mental influence, and can be explained readily without resort to the influence of the trance. (See *Mind Acting on Body*, page 459.)

The phenomena of "animal magnetism" are really the phenomena of trance. "Animal magnetism" is the mother of the great delusions of modern times—clairvoyance, spiritualism, and mind-reading. Whatever scientific basis there may be to these delusions is found in the trance, and in the involuntary life of which the trance is a part. The study of trance is, therefore, of the highest interest, both scientific and practical. Had the trance and the involuntary life been thoroughly understood by the profession, and a knowledge of them widely diffused, these delusions would have had no vitality.

TRICHINÆ. (See Worms.)

TYMPANITES. (See Wind in the Stomach and Dyspepsia.)

TYPHILITIS.

This term means an inflammation of the cæcum or blind portion of the intestine.

Causes.—It may be caused by eating nuts or other indigestible articles that fall into the blind pouch and cause irritation. It is not a very common disease, but quite apt to be fatal. The symptoms are local pain, some fever, vomiting, and constipation.

Treatment.—It is treated by hot fomentations, by anodynes, and by injections into the rectum.

TYPHUS FEVER AND TYPHOID FEVER—TYPHO MALARIAL FEVER—SHIP FEVER.

Various species of continued fever have been described by medical writers, such as *nervous*, *spotted*, *putrid*, *malignant*, *ship*, and

jail fevers; but of late years the observations of many scientific men in this country and in Europe have shown that nearly all these continued fevers that have been classed as distinct febrile diseases are merely varieties of the fever of which I now propose to give a brief description, and which, in its mitigated form of typhus fever, is by far the most common kind of continued fever in this country.

Symptoms.—Patient investigation has also convinced nearly all the medical men who have taken the trouble to inquire into the subject, that typhus fever, in the great majority of cases, is distinguished from all other febrile diseases by a specific eruption of the skin, and moreover that, as a general rule, it only attacks the same individual once in the course of his life—thus obeying the law which governs small-pox, scarlatina, and other eruptive diseases.

Typhus fever sometimes commences abruptly; at other times it is preceded, during several days, by certain symptoms which are called precursory or premonitory. The patient feels low-spirited, debilitated, and fatigued; he becomes dull, morose, and complains of a sensation of constriction and oppression at the chest, and of soreness or lassitude of the back and limbs. The countenance is unusually pale and sallow, the eyes lose their natural brilliancy and appear languid, the breath is cold or fetid, and the appetite is lost. These symptoms vary in severity. They may be so slight that the patient does not confine himself to his room, and in some instances they escape particular attention. Observation has shown that usually the quicker and shorter this premonitory stage is, the more severe and rapid will be the subsequent fever.

First stage.—The fever begins with a sensation of cold at the loins, followed by shiverings alternating with flushes of heat, considerable depression of strength and spirits, restlessness and general uneasiness. At the expiration of a few hours, fever in its more literal sense is manifested. The pulse is full and quick or oppressed, the head feels heavy, giddiness and headache are experienced, the face is flushed, or sometimes continues pale; there is considerable disturbance of the intellectual faculties, and an expression of distress is seen in the countenance, which is highly characteristic of the disease. The patient complains of constant thirst; the tongue is covered with a thin, whitish-colored fur; there is nausea; the bowels are often in a natural state; and the urine is scanty, high-colored, and hot. As the disease advances, the drowsiness increases; there is singing or buzzing in the ears, and the patient lies in a half-stupid state, and is unable to sit up in bed. When roused he still answers questions coherently, although in a slow and unusual man-

ner; and when he awakes or is spoken to abruptly his countenance expresses an air of astonishment. There is now oppression at the chest; the general prostration is much increased, and in many cases there is cough with expectoration. On the fourth or fifth day, often at a later period, an eruption of pink or reddish-colored measles-like spots, about the size of the head of a pin, breaks out on various parts of the body, but chiefly on the chest and abdomen; they are slightly rough to the touch, and disappear when pressed upon with the fingers, but soon reappear when the pressure is removed. This rash usually continues from three to five days, but is occasionally so slight and indistinct, particularly in children, that it often escapes observation; and in some instances the fever runs through its different stages without the skin exhibiting the slightest appearance of any kind of eruption. Bleeding from the nose sometimes occurs about this period, and much relieves the head for a time. All the symptoms are aggravated during the night; the slumbers are short, disturbed, and unrefreshing, and there may be slight wandering or delirium. The duration of this stage is generally about a week.

Second stage.—The surface of the body, which may have been previously moist, is now dry, and greatly increased in temperature. If the hand be pressed upon it for a minute or two, a peculiarly hot, pungent sensation is communicated, which continues for some time after the hand is removed. The pulse is variable; it may be moderately quick, full, or soft, and easily compressed. In fatal cases it continues very frequent, generally above 125. Often a *deep-colored* red suffuses the cheek, approaching either purple or mahogany color. The tongue, which was at first moist, now begins to get brown, dry and shrunk; and the parched state of the throat causes some difficulty in swallowing. The desire for cold and acid drinks is still urgent. Small purple-colored spots, or numerous minute white vesicles, like millet-seeds, are frequently seen upon the skin about the eighth or tenth day from the occurrence of the shivering. Sometimes the fever spots exist at the same time with the specific eruption already noticed. When this occurs, they both present nearly the same color, but may nevertheless be easily distinguished from one another. The brain is now more under the influence of the disease; the patient lies on his back in a sort of stupor, and appears careless about everything, although he is still aware, at times, of what is going on around him. When roused, he says that he is very well; his ideas are so confused that his answers to questions are generally incoherent, and he soon relapses into the same state of insensibility to external objects. He talks deliriously, and dreams

without sleeping. This kind of delirium is almost characteristic of the disease. In some instances the delirium is noisy, and the patient requires restraint. The abdomen is painful when pressed upon, and sometimes becomes distended and tense. There is also purging to a greater or less extent, and in many instances dysentery come on; the urine is passed with difficulty, or may even accumulate in and distend the bladder; the hands tremble, twitchings or spasmodic movements of different parts are observed, and black adhesive mucous matters covers the lips, gums, and teeth.

Third stage.—Towards the fourteenth day, sometimes two or three days earlier, if the disease is about to terminate favorably, a gradual amendment of all the symptoms is observed. A slight degree of moisture breaks out in the skin; sometimes bleeding from the nose takes place; the tongue, gums, and nostrils become moist, while the dark-colored matter with which they are covered is detached and falls off, and the patient now expectorates easily and freely. In many cases, free perspiration breaks out all over the body and limbs, and emits a peculiar odor; the urine flows abundantly; the delirium ceases; the senses recover their activity; the patient is again able to sleep; the appetite returns; the strength gradually increases; and convalescence commences about the twenty-first day. The memory often remains impaired; while the buzzing in the ears, which has been more or less troublesome throughout the disease, and the deafness, continue long after the fever has ceased.

When, on the contrary, the disease proceeds to a fatal termination, the symptoms become more alarming, and new morbid phenomena are developed. The skin is covered with a viscid fetid sweat; the urine and fæces are passed involuntarily; the expectoration is dark-colored and fetid; gangrenous sores form on the parts which have been subjected to pressure; the delirium is low and muttering, and the patient picks at the bedclothes; the death-rattle (as it is commonly called) is heard in the throat, and death takes place about the termination of the third week, frequently at an earlier period, rarely later.

The congestion, or accumulation of blood in the principal internal organs, which always occurs to a greater or less extent in the course of this disease, frequently causes inflammation. The brain is more or less affected in every case; but inflammation only occasionally occurs, and then we are often unable to determine its existence. This complication is most frequently met with in young, robust individuals, and is manifested for the most part during the first stage of the disease, sometimes within twenty-four

hours from its commencement, by buzzing and other noises in the ears, severe pain in the head, throbbing at the temples, delirium, convulsive movements, etc.; sometimes nausea, vomiting, purging, and pain in the bowels are the predominant symptoms. The danger is then not so great as in the preceding case. In other instances, pain in the chest, bloody expectoration, cough, and difficulty in breathing indicate inflammation of the lungs; or inflammation of the liver may be announced by an acute pain of the right side, a jaundiced appearance of the skin, etc. These affections greatly increase the danger, and they are the more to be dreaded because the extreme drowsiness and oppression of the brain often prevent the patient from directing the attention of the practitioner to the affected organ, and often conceal their existence from ordinary observers.

Typhus fever frequently appears under a *very mild form* (*typhoid*), which is in no way dangerous when not improperly treated. Gripping in the bowels, aching pains in the limbs, and headache, with disturbed sleep, constitute the chief sources of complaint. The headache is generally aggravated towards night, but is seldom accompanied with much intellectual disturbance. Sometimes an air of astonishment is observed in the patient's countenance on awaking, and his ideas are slightly confused for a short time. This benign form of the disease does not occasion fear of contagion, is its most prevalent form with us, and generally lasts from twenty to forty days.

On the other hand, in severe epidemics, the contagious principle is so virulent that the vital powers soon become overwhelmed. The patient lies as if he were in a state of apoplectic stupor. Black spots soon appear in different parts of the body; dark-colored, unhealthy-looking blood issues from the nostrils; the prostration increases, and the patient dies before the seventh day from the commencement of the disease.

Causes.—Many physicians believe that it cannot in every instance arise from intercourse with an infected person, and that it may be generated and developed by various external agents, such as filth, foul air, improper food, intoxicating liquors, etc., and afterwards become susceptible of communication from one individual to another.

The circumstances which operate in the diffusion of typhus fever are filth and impure air, deficient nourishment and food of bad quality, intemperance, a cold and moist state of the atmosphere, and everything of a depressing and debilitating nature.

All the excretions from a patient with the graver form of ty-

phus are charged with contagious *effluvia*, which become highly concentrated when cleanliness is neglected, and the ventilation is defective.

The long-continued use of ardent spirits lowers the vital energies, weakens and emaciates the body, and prepares it for the reception of typhus contagion, or of any epidemic disorder which may happen to prevail; and thus keeps the system, as it were, constantly upon the brink of disease. Besides the injurious influence which the use of alcoholic liquors exercises directly upon the animal economy, a train of evils are directly induced. The family of the drunkard are deprived of sufficient food, fuel, clothing, and other necessities and conveniences of life; while filth and all the concomitants of poverty, which so strongly tend to the diffusion of typhus fever, are brought into play; and hence the disease chiefly prevails in the districts of large towns where the greatest quantity of spirits is consumed.

The present belief is that typhoid fever is communicated especially through drinking-water. Wells are contaminated through the evil, from the discharges in privies, and thus, as has been many times proved, a large number of families may become the victims of the disease.

DISTINCTION BETWEEN TYPHUS AND TYPHOID FEVER.

In typhus fever there is no bleeding at the nose or bronchitis; the bowels are constipated; there is an eruption, that does *not* disappear on pressure, about the fifth, sixth, or seventh day; progress more rapid than in typhoid fever.

Death may occur within ten days.

In typhoid fever there are bronchitis and bleeding at the nose; gurgling in the bowels; diarrhœa; eruption of rose spots, that *disappear* on pressure; *very slow* progress.

Death not usually takes place under fourteen or fifteen days.

It is oftentimes quite difficult for the physician to distinguish between the two diseases. Typhus is rather more fatal than typhoid. Of the former, about one in ten or fifteen die; of the latter, about one in twenty.

The general principles of treatment are nearly the same for both diseases.

Treatment.—In mild cases of typhoid fever, convalescence is established between the fourteenth and eighteenth days from the commencement of the disease; that is to say, the patient, although still in a feeble condition, begins to relish his food and sleeps more soundly, while his tongue is tolerably clean and his pulse natural. In ordinary cases, as we have already mentioned in describing the disease, the patient cannot be considered convalescent until about

the twenty-first day; and in the more severe cases the disease may be protracted to the thirtieth or fortieth day, or even later. In the treatment of typhus and typhoid fever, our remedies are to be directed, not to cutting short, but to controlling the fever, and relieving the local disorders which may occur during its course, until nature effects the cure. But when, after frequent contact with the sick, a person finds he has headache, pain in the back, and general lassitude, by taking an emetic at night, or a cathartic, or both, he may be relieved of these symptoms, which otherwise might prove the precursors of the fever.

In mild cases of typhus, or in the simple forms of continued fever, above alluded to, the only remedies required are mild laxatives, such as a little *castor-oil*. The daily use of purgatives interferes with the regular course of the disease, and might produce considerable irritation, or even inflammation of the bowels.

The two great remedies now used for typhus and typhoid fever are *pure air* and *stimulants*. *Pure air* is to be obtained by free and abundant ventilation of the sick-room, or, as has been successfully tried in some cases in hospitals, in moderate weather, removing them into *tents*. In treating these fevers we should carry out the suggestions of Florence Nightingale, to "*keep the air which the patient breathes as pure as the outside air, without chilling him.*"

If I were taken down with this disease I should desire, first of all, *pure air*, *good nursing*, and *stimulants* if I became debilitated. The old-fashioned method of bleeding, purging and dosing with all sorts of drugs in fevers is now abandoned, and very fortunately for our patients.

Stimulants are administered in the form of whiskey, brandy-punch, wine, and champagne. The doses of these stimulants, and the frequency of their administration, must be determined by the wants of each individual case. For this reason, among others, a medical adviser of experience is imperatively needed in these serious and exhausting diseases. A tablespoonful of brandy may be given every two, three, or four hours. Sometimes very much larger doses are given. All cases of typhus or typhoid fever do not need stimulants.

Beef-tea is to be highly recommended, either alone or connected with the stimulants.

Sponging the body with cold or tepid water and sprinkling the pillow and sheets is very beneficial in all cases; it diminishes the distressing heat and dryness of the skin, is soothing and grateful to the patient, and is sometimes followed by gentle perspiration,

and more tranquil sleep. When the skin is hot and dry, cold water may be employed with perfect safety, and without any risk of interrupting the regular course of the rash which usually appears on the skin; but tepid water is to be preferred if there be any degree of moisture on the skin, and at very advanced periods of the disease.

If rawness or excoriation of the hips, haunches, or back occurs, the part may be washed with a solution of ten to fifteen grains ($\cdot 66$ or 1 gram) of *nitrate of silver* (*lunar caustic*) in an ounce of water (32 grams), or with a weak solution of the *acetate of lead* (*sugar of lead*) in spirits of turpentine; and if sloughing or gangrenous ulcers form, *carrot poultices*, and the means recommended under the head of *Mortification*, are to be employed. But we should endeavor to avoid these untoward occurrences by supporting the patient with pillows, so as to take off the pressure from the parts most likely to suffer; and in all tedious cases, when a tendency to excoriation is observed, the parts should be defended by soap-plaster. The India-rubber water-bed and the India-rubber air-pillows are the best means of guarding against the effects of pressure.

It sometimes happens, in the course of typhus fever, that the bladder becomes distended and incapable of discharging its contents. The state of this organ should therefore be carefully attended to; and if fulness or swelling be observed at the lower part of the belly, the urine must be drawn off with the catheter.

TYPHO-MALARIAL FEVER.—Chlorate of potash in doses of 10 grains ($\cdot 66$ grams) every two hours. In the later stages, brandy and ammonia and other stimulants may be needed. The diarrhoea and pain in the bowels are relieved by doses of twenty grains (1.33 grams) of subnitrate of bismuth combined with a little opium.

Ventilation of the sick-chamber, as has already been stated, is always of primary importance, and is more particularly demanded in all contagious febrile diseases. But great care must nevertheless be taken to screen the patient from *currents* of air, and to regulate the temperature according to the stage of the disease and the state of the patient. As long as the surface of the body continues hot and dry the room should be kept cool and the bedclothes light; but towards the termination of the fever, or when the temperature of the body is considerably reduced, additional covering must be employed. The bed-pan for evacuations should be used on the necessary occasions, and the patient disturbed as little as possible; and should the evacuations be passed involuntarily, the bed should be protected by placing a piece of oiled silk or glazed cloth under

the patient. The gums should be carefully washed, the linen and bedclothes frequently changed; and the necessity for the utmost attention to cleanliness in the patient's person, and to everything around him, must be obvious to every one.

During *convalescence* the patient should wear flannel next the skin, and avoid sudden alternations of atmospheric temperature. He must carefully abstain from premature mental or bodily exertion, and the return to his ordinary occupations ought to be *gradual and cautious*.

Diet and regimen.—During the first, or inflammatory stage of the disease, no kind of nourishment should be allowed beyond newly prepared whey or barley-water; but when the excitement subsides, small quantities of very light food should be given, such as thin arrow-root, gruel, tapioca, and vegetable jellies. When wine and stimulants are considered necessary, it will also be advisable to keep up the patient's strength with beef-tea, chicken or mutton broth, as before stated.

It may be inferred, from what has been stated in a previous part of this article, that the best means of diminishing the power of contagion, in this and other eruptive fevers, are *cleanliness and proper ventilation*. The attendants should avoid standing in a current of air which has passed over the patient, or, in other words, should stand between the patient and the channel through which the air enters the apartment; they should also avoid inhaling his breath, or leaning over him; and should avoid entering the sick apartment in the morning with an empty stomach. It will likewise be advisable to purify the room from time to time, by placing flat dishes, containing the *chloride of lime* mixed with water, on different parts of the floor.

The late Dr. Henry, of Manchester, discovered that clothes impregnated with the contagious effluvia from the bodies of patients with typhus, scarlatina, etc., are disinfected by exposing them to a temperature of 204° F. for an hour and three quarters, and may afterward be worn with perfect safety by healthy persons.

ULCERATED SORE-THROAT. (See Diphtheria.)

ULCERS. (See Plate XV.)

Ulcers, whether proceeding from local or constitutional causes, are classed by surgeons under different heads, according to their appearances and the symptoms with which they are accompanied.

The species of ulcers usually described are the healthy, the indolent, the irritable, and the sloughing, or phagedenic.

The *simple* or *healthy ulcer* is covered with small fleshy projections, which are of a red color, firm, and pointed. These granular eminences are closely connected, forming an equal surface, and are bedewed with cream-colored matter (*pus*). This form of ulcer is not painful, but is attended with a peculiar sensation of itching; its edges are smooth, soft, and though slightly florid, do not present the fiery-looking appearance of an inflamed part. Now, when an ulcer, whether proceeding from a wound, a burn, an abscess, or, in a word, from any other cause, either local or constitutional, exhibits these appearances, we know that the process which nature sets up for the restoration of the part is going on favorably, and needs no assistance from art. In fact, no means possessed of the direct power of promoting a cure are known; hence all that remains for us to do is to preserve the natural process from interruption by defending the part from injury.

Treatment.—In ordinary cases, it will be sufficient to dress the sore with dry lint or old linen once in twenty-four hours, when it should be carefully washed with milk-warm water. If part of the dressing adhere to the edges of the ulcer, it should be carefully removed, so as not to produce irritation, or injure the numerous red points already noticed, called *granulations*. The necessity of protecting these little bodies from mechanical injury is obvious, because they secrete the matter which flows from the ulcerated surface, and without which the healing process could not be carried on; while at the same time they gradually fill up the cavity of the sore, until its surface reaches the level of the surrounding skin—thus constituting the means adopted by nature for the completion of the cure. Many surgeons smear the lint, or whatever covering is employed, with a little *Turner's cerate*, *sugar of lead ointment*, or some other mild unctuous substance; this, however, is not done with the intention of expediting the cure, but merely to prevent the lint from adhering, and the edges of the ulcer from being injured on its removal. The dressing must be kept on by a roller wound round the limb, from its extremity to some distance above the sore. This is not to be applied so tightly as to produce pain, but with sufficient firmness to retain its own place and that of the lint, or whatever dressing may be employed.

When a wound cannot be healed by the adhesive process, or by what surgeons call the first intention, and when it is found necessary to open an abscess, we should apply warm poultices to the part, in order to promote the growth of granulations, until these

have sprung up to a level with the surrounding skin. The poultices are then to be discontinued, and lint applied as above directed.

Sometimes the granulations become too luxuriant, and spring up higher than the edges of the sore, forming what is called *proud-flesh*, which may cover the whole or only part of the ulcer. When this occurs, we must touch the fungous part daily with *blue vitriol* (*sulphate of copper*), or *lunar caustic*, until it be brought down to the proper level; or we may apply pressure, by means of strips of adhesive plaster and suitable bandages. In some instances, the ordinary means of keeping down proud-flesh do not succeed; we then have recourse to the application of a piece of sheet-lead over the sore. When this measure is deemed necessary, a pledget of lint, covered with simple ointment, should be interposed between the lead and the ulcer, and a long roller or laced stocking applied so as to embrace the whole limb, and retain the lead in place. Iodoform applied directly and freely to an ulcerating surface is most excellent. The only objection is the very disagreeable odor.

The *indolent ulcer* is characterized by a smooth surface, without granulations, of various colors. Sometimes it is glossy or semi-transparent, or covered with a layer of viscid mucus; its edges are hard, white, and sometimes turned outward, while the surrounding skin presents a varnished appearance, looks polished like a pebble, or exhibits a rough and scaly aspect. The limb on which this description of ulcer is seated is always more or less swollen, and the matter discharged is a thin, serous-looking fluid, or is tenacious and fetid.

Some people submit to all the inconvenience and discomfort of an indolent ulcer for years, being afraid to dry it up through a dread of injuring the system, and inducing some inveterate or acute disease by suppressing a long-continued discharge. These ulcers, however, may be healed with perfect propriety, provided proper treatment be adopted, and the patient adheres to a sufficiently rigorous diet, until the system accommodates itself to the change, and the state of the general habit is corrected.

The mode of treatment now generally preferred is that by pressure with adhesive straps, which is not only very efficacious, but possesses the advantage of being simple and easily managed. It is performed in the following manner: The limb having been shaved, a slip of adhesive plaster, about an inch and a half in breadth, is to be applied completely round the limb, about two inches below the ulcer; and, in order to fix the strap firmly, one end of it should be made to overlap the other; then a second strap is to be applied a little higher, so as to cover two thirds of the first; then a third in

the same manner, proceeding upward until the ulcer is entirely covered, and an inch or two of the skin above it. Having completed this part of the process, a long cotton roller, three inches broad, is then to be wound round the limb, from the toes to the joint immediately above the sore, or a laced stocking may be employed in place of the roller. The ulcer should be dressed once in thirty-five or forty-eight hours; and if the patient complain of severe itching and heat at the part, the bandage must be freely moistened with cold water. The straps and roller should not at first be applied very tight, or in such a manner as to produce pain; but after they have been used several times the patient will, without inconvenience, bear to have the pressure considerably increased. This method of treatment soon produces the effect of subduing the swelling of the limb and reducing the callous edges of the ulcer; granulations begin to spring up and discharge cream-colored matter; the part assumes a healthy action, and presents the appearance of the simple ulcer, above described; and the cure is soon completed. Strapping with an elastic rubber bandage is also much used at present, and is a very successful method.

Although the most obstinate cases of indolent ulcer are often remedied by the above plan of treatment, yet it is not to be expected that this or any other method shall be invariably successful; we are therefore occasionally under the necessity of having recourse to other remedies. Various stimulants are employed to excite the growth of granulations, and induce a healthy action of the part. *Mild citrine* ointment spread on lint or on soft linen rag, or salve composed of an ounce of *basilicon* mixed with a drachm of the *red precipitate of mercury*, are useful dressings; but they must be used stronger or weaker, according to the effect produced. If the patient complain of smarting or pain, the strength of the ointment should be diminished by the addition of a little lard. The best plan, however, is not to persist in the use of any particular ointment or lotion, but to vary the dressing as soon as we observe that the ulcer begins to fall back into the same indolent state, or remains stationary. Whatever application is employed, the use of the roller should never be neglected, because there is no fact in surgery better ascertained than the efficacy of pressure in cases of indolent ulcer.

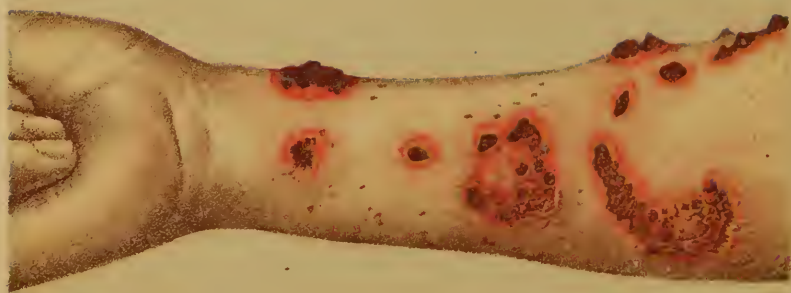
Irritable ulcers vary considerably in appearance in different cases. In general, the surface of the sore at the commencement presents a very unequal aspect; the granulations at some parts are seen shooting up too high, in others they are scarcely perceptible. There is much pain and tenderness of the part, and redness of the



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ULCERS

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adjacent skin; the discharge consists of bloody matter, which Sir Astley Cooper compares to strawberry-cream in appearance. If the irritation be allowed to continue, the granulating action is gradually destroyed; the surface of the sore acquires a smooth, buff-colored appearance, the matter discharged is thin, and the part becomes exceedingly tender, and is very painful when touched. Sometimes this species of sore is level with the surface of the limb; at other times it is deep like a cup, with thin, sharp edges, and continues to spread as long as the excess of action exists. Weak, irritable individuals, more especially those whose constitutions have been injured by intemperance, are most liable to this kind of ulcer; it also occurs in full-fed, plethoric persons.

In the treatment of irritable ulcers we must avoid everything which can keep up the excitement, and employ remedies of a soothing tendency. Of these, the best, if the excitement be merely local, are *fomentations of the decoction of poppy-heads*, and warm bread-and-milk poultices. The following ointment is strongly recommended:

Spermaceti ointment, half an ounce (16 grams),
Citrine ointment, half an ounce (16 grams),
Opium in powder, 1 drachm (4 grams). Mix.

The following bromine prescription has been highly recommended:

Bromine, 1 drachm (4 grams),
Bromide of potash, 2 ounces (64 grams),
Water, 30 grains (1.95 grams).

Apply to the ulcer with a small sponge.

Glycerine and chloral combined have been successfully used:

Chloral, 4 drachms (16 grams),
Glycerine, 1 ounce (32 grams),
Water, 16 ounces (512 grams).

To be spread on lint, and applied to the part twice a day.

When an ulcer is of an indolent character, moderate exercise on foot may be allowed, and is even serviceable in many cases; here, on the contrary, motion would certainly have the effect of increasing the irritation, and absolute rest must therefore be strictly enforced.

The sloughing, or phagedenic ulcer.—The irritable ulcer with-

out granulation is very liable to become affected with inflammation of a low character, which soon terminates in sloughing or mortification.

The sloughing ulcer generally arises from constitutional causes, such as great irritability of the system brought on by drinking spirits, by the abuse of mercury, or by the deleterious influence of an unwholesome atmosphere. The inflammation produced by the local application of certain morbid poisons may likewise end rapidly in sloughing ulceration.

When the sloughing has commenced, *carrot poultices* should be had recourse to; or a lotion composed of fifty drops of *nitric acid* to a quart of water may be constantly used, the strength being increased or diminished according to the patient's sensations. Carbolic acid—five grains to an ounce of water—is a good application. This application has an excellent effect in promoting the growth of healthy granulations. Oiled silk should be applied over the ulcer until the slough be detached, in order to prevent the disagreeable smell which would otherwise arise from the mortifying parts. The state of the constitution must be carefully attended to. In most cases the administration of *opium*, as already recommended, is found necessary. (See article Varicose Veins.)

Electricity—either the faradic or galvanic current, preferably the latter—is now much used for ulcers, and it often acts most satisfactorily. Great results have also been obtained by the use of “body batteries” made of plates of zinc and silver connected by a wire. The silver plate is worn on the ulcer.

Constitutional Treatment.—Tonics and alterative remedies should oftentimes be used in connection with local applications for ulcers as by the following prescription:

Muriate tincture of iron, 1 drachm (4 grams),
Sulphate of cinchona, 8 grains (.6 gram),
Strychnine, $\frac{1}{4}$ grain (.016 gram),
Syrup, 1 ounce (32 grams),
Water, 1 ounce (32 grams).

Dose.—One teaspoonful.

URINE, INCONTINENCE OF.--WETTING THE BED.

When a person is unable to retain his urine, and it constantly passes off involuntarily, he is said to be affected with incontinence of urine.

Inability to retain the urine is a symptom of various disordered conditions of the urinary organs. In people advanced in life it is frequently associated with retention of urine. The bladder is constantly full, and every movement of the body causes the urine to escape; in this manner it passes involuntarily, as quickly as it is secreted by the kidneys. (See Urine, Retention of.)

Incontinence of urine is often connected with a weakened or paralyzed state of the lower limbs, which in many cases is caused by injuries done to the spine, or by some disorder of the spinal marrow. Sometimes, again, the paralytic condition of the inferior extremities, to which the incontinence of urine is obviously subordinate, comes on gradually, without any known cause. In such cases the bladder does not appear to be distended; but its sphincter muscle offers no resistance to the escape of the urine, which dribbles constantly from the parts, to the great discomfort of the patient. The treatment generally relied on in this form of the disorder consists in cold bathing, more especially the daily application of the cold douche to the lower parts of the body; the application of *blisters* to the lower part of the back (*sacrum*); the internal use of the *tincture of cantharides*, in doses of from one to five drops (.05 to .25 gram), three times a day, in half a teacupful of gum-water or linseed-tea; *belladonna* in the form of the tincture, in doses of from two to five drops; and tonic remedies, such as *quinine* or the *prepared rust of iron*. In some cases the introduction of the *catheter* has been found serviceable. I have found *general electrization* efficacious in incontinence of urine. (See Local Electrization and Electro-Therapeutics.)

Children are particularly liable to incontinence of urine. In general, they are troubled with it only when asleep; but in many cases the calls to void the urine during the day are more frequent than in health; and the child, if spoken to sharply, or alarmed from any cause, makes water involuntarily. This nocturnal incontinence of urine sometimes resists every kind of treatment; but it usually gets well of itself as the child grows up and acquires strength. Much benefit may be derived from tonic remedies; of these, perhaps the most eligible is the *tincture of chloride of iron*, which should be given in doses of five drops (.25 gram) three times a day, in a wineglassful of the infusion of gentian or decoction of whortleberry, and continued daily for several weeks or months, according to the circumstances. A succession of very small blisters to the sacrum, or lower part of the back, have been often successfully employed. Bathing the lower part of the abdomen and genital organs night and morning with cold water has often an excel-

lent effect. The state of the stomach and bowels should be carefully attended to. Watery diet should be avoided, and tea prohibited in the afternoon. Eating shortly before going to bed is improper. In some cases, simply abstaining from meat and living on fruit, vegetables and farinaceous diet effects a cure. Contrivances which mechanically prevent the discharge of urine often do serious mischief, and are never followed by any permanent benefit. In all cases of this disease in the male sex, a small bag of oiled silk or India-rubber cloth (Macintosh), appended to the parts, will be found very serviceable as far as regards cleanliness; and a piece of the same description of cloth, about a yard square, placed under the hips at night is also conducive to cleanliness and comfort.

The following prescription of belladonna, cantharides and ergot is to be commended:

Fluid extract of ergot, 2 ounces (64 grams),
Cinnamon water, 2 ounces (64 grams),
Tincture of belladonna, 1 drachm (4 grams),
Tincture of cantharides, 1 drachm ($\frac{1}{2}$ grams).

The zinc combination (see page 495) may also be advised.

URINE, RETENTION OF—(*Strangury—Dysuria.*)

Symptoms.—Retention of the urine, or strangury, as it is commonly called, is either *complete* or *incomplete*. In the former case, no urine can be passed, or only a few drops are voided with great straining and at intervals, without affording any relief to the patient, whose state soon becomes one of the most distressing to which man is liable. In the latter case the symptoms are not so urgent, and the patient passes, occasionally, a considerable quantity of urine, without the pain or distention at the lower part of the belly being much or in any degree relieved, or the restlessness and symptoms of general excitement abated.

Treatment.—Retention of urine sometimes occurs in persons who have been prevented from making water by delicacy, indolence, or other causes, until the bladder, from over-distention, has become so weakened that it loses its contractile power, and is unable to empty itself. In this case the feet ought to be placed in water as hot as it can be borne, and warm fomentations should be applied over the lower part of the belly, or the penis may be immersed in a basin of warm water; by these means, continued for some time, and the application of gentle pressure over the bladder, the patient will occasionally succeed in voiding his urine. The

Plate II.



Fragaria virginiana



Rubus idaeus



Rubus idaeus



Fragaria virginiana



Rubus idaeus



Rubus idaeus

disorder, when depending on this cause, may be relieved by other methods of treatment; but in general it is found necessary to draw off the urine by means of a *catheter*. In many instances this instrument must be employed twice or thrice daily, or even more frequently, for several days or even weeks, until the muscular structure of the bladder recovers its tone. A simple and excellent method of restoring the tone of the bladder is to pour cold water on the lower part of the belly from a height, by means of a jug or tea-kettle. This should be done night and morning until the catheter is no longer required. Retention of the urine from a weakened or paralyzed state of the bladder may also arise from certain affections of the brain, or from injuries done to the spine by blows or otherwise. In the latter case, some degree of insensibility and weakness of the lower limbs is generally present. This form of the disorder is often symptomatic of particular diseases. It occurs sometimes in the course of fevers, painters' colic, dysentery, etc. In all such cases the state of the bladder should be carefully attended to, and the catheter employed at least three or four times in the course of twenty-four hours, until the patient recovers from the disease on which the retention depends.

Strangury sometimes arises from the internal administration of Spanish flies (cantharides) or their external application in the form of blisters. In this case there is a sensation of fulness and weight at the region of the bladder, attended with frequent inclination to make water, smarting, heat, and difficulty in voiding it. These symptoms are soon relieved by drinking freely of linseed-tea, barley-water, decoction of marsh-mallow. In severe cases it will also be advisable to take forty or fifty drops (2 or 2.5 grams) of the *tincture of henbane*, in two ounces (64 grams) of camphor mixture, every four or six hours. These remedies are also very serviceable in relieving the strangury which attends gonorrhea. In this last case much relief may also be derived from the immersion of the penis in warm water. This condition may also be successfully treated by belladonna in doses of two or three drops; by the tincture of cantharides in one-drop doses, and by hot cloths to the loins and perineum, and warm sitz-baths. Physicians inject morphia or atropine combined with morphia.

In extreme cases of retention of urine, when all other means have failed, it is the duty of the surgeon to withdraw the urine by puncturing the bladder, in order to prevent a fatal termination.

Persons subject to this disease should live abstemiously, and carefully guard against exposure to cold, sudden vicissitudes of temperature, wet feet, and every kind of severe bodily exercise; and,

of all things, they should never neglect to attend instantly to a call to make water.

UTERINE DISEASES. (See Women, Diseases of.)

UVULA—PALATE—TREATMENT OF PALATINE DEFECTS.

Uvula is the name of the tassel-like appendage seen hanging in the throat when the tongue is depressed.

People ordinarily call this the palate, but strictly speaking the whole roof of the mouth is the Palate, and the pendulous tubercle is the Uvula. Anatomists designate the palate by the terms "Hard Palate" and "Soft Palate" (*Os-palati* and *Velum-palati*), the former applying to the central bony part of the roof, and the latter to the muscular, movable back part of the mouth.

"Cutting off the palate" refers only to excision of the uvula. This operation is occasionally required, because an undue elongation of the uvula creates an irritation in the throat. The function of the uvula has never been definitely determined, and its excision,

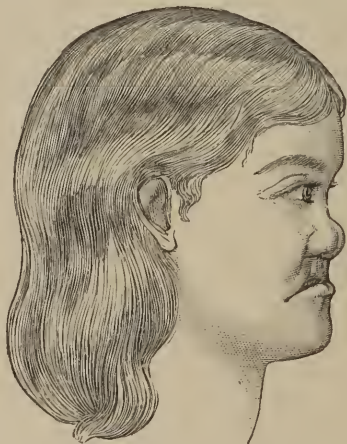


FIG. 1.

therefore, need not be regarded with apprehension. A loss, however, of only a small portion of the true palate is attended with serious results.

Defects of the palate are of two classes: 1st. Congenital Cleft-Palate, which, as its name implies, is a defect dating from birth, and is usually associated with hare-lip. 2d. Acquired lesions of the palate, in which there is a loss arising from accident or disease. Gun-shot wounds have been a prolific cause among accidents of

palatine defects, and among diseases syphilis has worked direful ravages with the nasal passages and throat. In the writer's* practice have been seen some of the most distressing deformities arising from this horrible scourge, and worse than all, its effects are not always confined to the individual who contracts the disease, but may be transmitted to the offspring.

In Fig. 1 is shown the profile of a miss sixteen years of age, who had for four or five years suffered from syphilis, inherited from her parents. At about eleven years of age symptoms of a catarrhal character exhibited themselves in the nasal passages, and although she was under the best medical care in this country, the disease went on until the roof of the mouth was destroyed; all the teeth in front of the molars loosened and fell out; the jaw-bone and nasal bones came away to a considerable extent; the nose and upper lip fell in, and the external appearance was even worse than appears in the engraving.

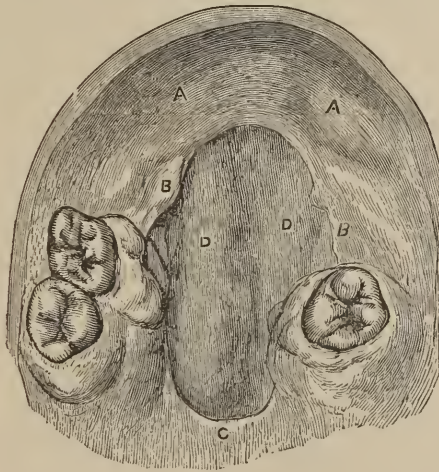


FIG. 2.

In Fig. 2 is shown the roof of the mouth, with the opening into the nasal cavity. A A indicates the front part next the lip, and C shows a portion of the soft palate. When syphilis passes its primary and secondary stages in the individual who has contracted it, disturbances of the throat and nasal passages show themselves; sometimes in the upper part of the pharynx immediately behind the uvula, and involving all the adjacent parts, which begin to slough off; sometimes in the nasal passages, eating its way down through the roof into the mouth, and again, in conjunction with

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both these manifestations, or independent of either, the nose is attacked and destroyed.



FIG. 3.

Fig. 3 shows the condition of such a person five years after the inception of the disease. The medical and surgical remedies are

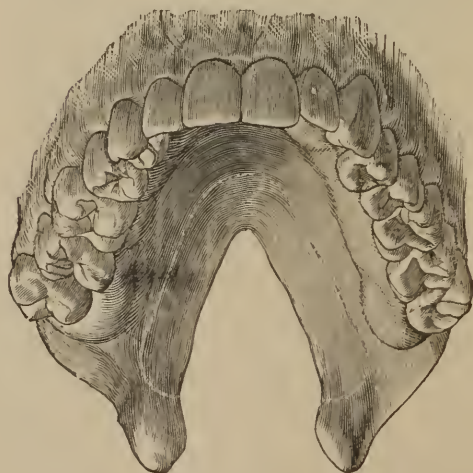


FIG. 4.

described in another part of this work. This article will be confined to a description of the means used for restoration in such cases after the disease has spent its course.



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J. Macdonald

LUPUS
From Photographs of Skin Diseases taken from Life under the direction of Geo. Henry Fox, M.D.
E. B. TREAT, N. Y. PUBLISHER.

ROSACEA



THOMAS



LUCAS

Congenital defects of the palate do not involve disease either in the individual or in the ancestry. Thousands of persons are living in whom there is no taint of any disease, but in whom the roof of the mouth is open into the nasal passages from front to rear.

Figure 4 shows a cleft in the soft palate only, and Figure 5 a distressing deformity in which the soft palate is gone, the hard palate or roof of the mouth, and all the teeth and jaw-bone in front. In both these cases, it will be remembered, the persons were born in this condition. Between these extremes every variety of cleft-palate is occasionally found.

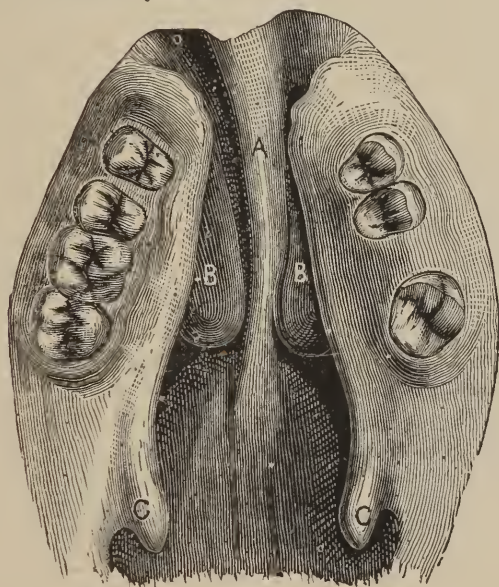


FIG. 5.

The origin of cleft-palate lies in an arrest of development, but the causes of that arrest are unknown. It can be traced back to a very early period of intra-uterine life. The development of the foetus is simultaneously from the two sides of the jaws and uniting upon the median line. This union along the middle of the roof of the mouth in normal development is complete before the end of the *second* month after conception. The function of development ceases when the period for the fulfilment of the type has passed; consequently, if any cause of even a temporary nature has arisen to prevent such a union by an arrest of development until the time for union has passed, the non-union or fissure along the median line remains fixed. Superstitious people are quite ready to refer deformities in offspring to some specific circumstance in the life of

the mother, but the so-called causes are rarely coincident in time, and never in accord with scientific observation.

There has been some evidence that the deformity was inherited, but even if such cases were traced back through the ancestry until we arrive at the initial, we should be equally at a loss to account for the first arrestation.

On the other hand, by far the large majority of cases seem to be free from all inherited taint, and are isolated cases in the family.

It does not seem to be confined to any class or condition in life, and, like other departures from a normal type, examples may occasionally be found among the most cultured and purest blood, but the large majority of cases come from the lower walks of life—from the poorly nourished and the physically depraved.

A fissure of the palate would naturally be supposed to affect primarily deglutition, and the earliest efforts at a remedy were directed to this point, but a closer observation has shown that in the adult, deglutition is not impaired, the regurgitation of either fluids or solids being very rare.

With the infant the position of the head in taking nourishment is favorable to deglutition, and long before it has reached maturity it learns by management to overcome the inconvenience or difficulty in swallowing.

Acquired lesions, however, coming generally in adult life, produce in this respect very great inconvenience.

In both cases (acquired and congenital) the faculty of distinct articulate speech is seriously impaired by defects of any extent.

The only evil arising from congenital cleft palate which demands the interference of science and art is its impairment of speech.

With a loss of any portion of the palate, whether congenital or accidental, sufficient to make a permanent communication between the buccal and nasal cavities, the perfect articulation of any spoken language is impossible.

In the English language, spoken with a defective palate, the sound of D approximates the sound of N; that of B to M; K and G become impossible, except under very peculiar conditions, and S, T, and Ch become difficult and sometimes impossible; besides the resonating tone-character of both buccal and nasal cavities becomes entirely changed by their partial or complete union, or by change in their form and dimensions, so that from these various causes the speech of people so afflicted becomes altered in tone, indistinct in its enunciation, wanting in many of its sounds, difficult and some-

times impossible to understand, and altogether disagreeable. To such an extent has this cause, and this alone, operated on a sensitive mind, that it has often, in the absence of relief, driven the sufferers from society and made them utterly wretched. This is quite sufficient to call forth all the resources of science in seeking a remedy.

The cure for these evils must be by closing the abnormal passage by some means which will restore to the deformed organs their functions. In perforations of the hard palate, unless of extraordinary extent, the method is very simple; in the loss of the soft palate by disease the remedy is more difficult, and in extensive congenital deformity still more complicated means must be resorted to.

The treatment of these lesions has been both surgical and mechanical.

The congenital defects have been treated by both surgery and mechanism, but the acquired cases have been almost always relegated to mechanism.

The surgical operation is termed *staphyloraphy* (a word of Greek derivation, signifying *suture of the uvula*), and though rapidly falling into disuse it is still maintained by some as being the only treatment which such cases should receive. It is performed by paring the edges of the cleft velum and uniting them with sutures.

But one thought in the interest of patients has seemed to govern all surgeons in this practice, which was that a roof to the mouth of natural tissue must be better *per se* than no roof, or than an artificial one, and although the practice has been tested in a thousand cases by the most eminent surgeons of their time, it has resulted in such an uniformity of failure, considered as a beneficent operation, that it should have long ago been utterly abandoned. Certain it is that it has been performed many times when the only apparent object was to gain *éclat* by the skilful use of the knife in a difficult case before an admiring audience, and with no possible hope of even a union or a surgical success.

The reasons for failure are based upon the anatomy and physiology of the vocal organs, and upon the mechanism of speech.

Articulate speech is the result of certain definite sounds; the combination of different sounds and of interruptions to such sounds, which are by common consent associated with definite ideas, and thus express them.

The voice, as it issues from the larynx, is modified in its tone and character by resonance in the buccal or nasal cavities separately, and in certain cases simultaneously by both.

It is directed or interrupted in its passage by certain organs with which it comes in contact, and thus an almost endless variety of tones and combination of tones is created.

One of the most important organs in this direction or interruption of voice is the velum-palati. It is essential to the perfection of human speech that the nasal passage for the outflow of sound should at certain times be completely shut off and all the sound directed through the mouth.

If in such cases there be any escape of sound behind the curtain of the palate, the purity of speech is destroyed.

The soft palate, in conjunction with the muscular wall of the upper pharynx, must be under active control to produce this result.

If the palate be deformed, or either it or the pharyngeal walls paralyzed or inactive, we shall find a change in the tone of the voice, and more or less indistinctness of utterance, depending upon the extent of the deformity or inactivity. The proverbial nasal twang of the "Yankee" is entirely owing to an inaction of these two organs. There is in those cases an escape of sound into the nasal cavity, which is altered by the resonance of that cavity, and which should have been shut off. In passing we may say that this is not owing in any sense to a deformity of those organs in the "Yankee," but rather to a lazy habit of speech imitated necessarily by the children whose ultimatum is to copy their elders, and thus the habit becomes confirmed as the normal condition of the speech of a whole community.

The peculiar speech of hare-lip people is not owing to the defect of the lip, but rather to the defect of the palate, which is commonly associated with hare-lips.

There are rare instances in which people have been born with a fissure of the lip and no cleft of the palate. In such cases the speech is not affected.

The function of the velum-palati in articulate speech is not confined to the interruption of the nasal passage; in the formation of certain sounds it must be depressed and held in firm contact with the back of the tongue, and the sound directed and prolonged through the nasal passages. All this involves a palatal organ of flexibility, mobility, and extent.

The reason why staphyloraphy is so generally a failure, even where it is a surgical success, is because the newly formed septum is rigid, tense and deficient in length; in the large majority of cases it cannot, by any possibility, be brought into firm contact with the pharyngeal wall, and imperfect speech will necessarily and always follow this defect.

To the credit of surgery be it said that it has done probably all that it can under the circumstances, and the only surgical hope of the future seems to be in the direction of making the operation at a very early period of life, with the expectation that as the organs develop in tissue, function, and activity, the defect will be overcome.

As surgery fails, mechanism comes to the rescue. Where Nature is deficient, she is supplemented by art, and an organ whose function was destroyed by accident, disease, or want of development, can have that function restored by properly adapted mechanism.

The restoration of speech to a person who has once possessed that faculty and lost it through destruction of the palate is comparatively easy, but to confer the faculty of perfect speech with an artificial organ upon one who has been afflicted from birth with the absence of the natural organ, and has grown to maturity without the ability of distinct utterance, becomes a much more difficult problem.

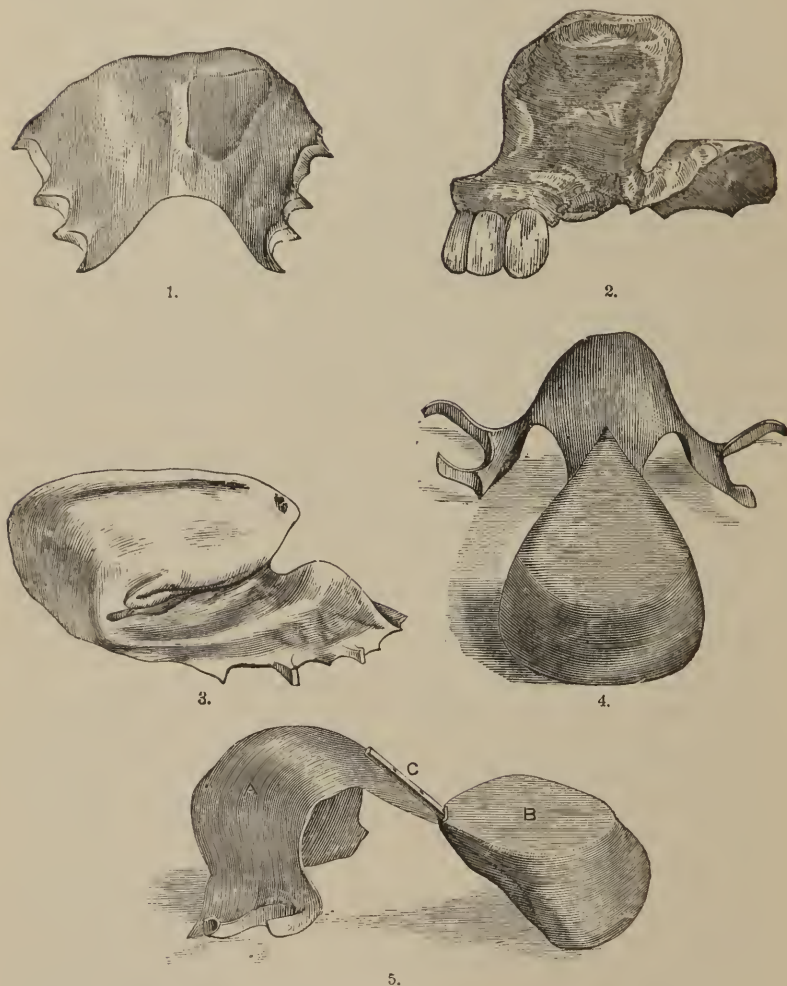
In accidental lesions, even crude appliances, made without much skill or accuracy, are often beneficial; while in congenital cases, the full resources of science and the nicest adaptations of art are needed to accomplish the desired result.

The partial destruction of any organ of speech may occur after the acquirement of speech, and nature makes an extraordinary effort to overcome the difficulty by a new use and activity of other organs which in a measure supply the deficiency.

Thus the total loss of speech would follow the destruction of the hard palate, but an instant restoration would result upon the introduction of an obturator. But in a congenital case the faculty of perfect speech must be acquired by practice, even after the introduction of the most skilfully constructed and scientific appliance.

All apparatus adapted to the roof of the month, whether forward or back, to the hard palate or soft palate, may properly be designated as artificial palates, but as such instruments may be divided into two distinct classes, operated upon different principles, and applied, in the main, to entirely different cases, without the possibility of interchange of principle, one is called an obturator, and the other an artificial velum. An obturator is a stopper, plug, or cover—hard, non-elastic and stationary, fitted to an opening with a well-defined border or outline, and shutting off the passage. Such instruments are of nearly universal application to perforations of the hard or soft palate resulting from accident or disease, but they are rarely applicable to congenital fissure of the velum.

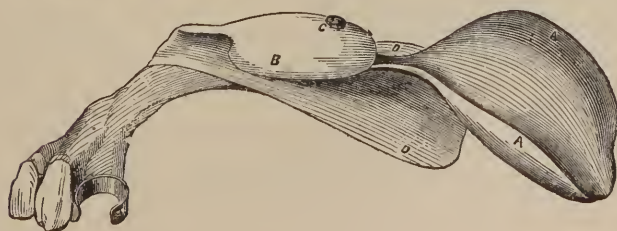
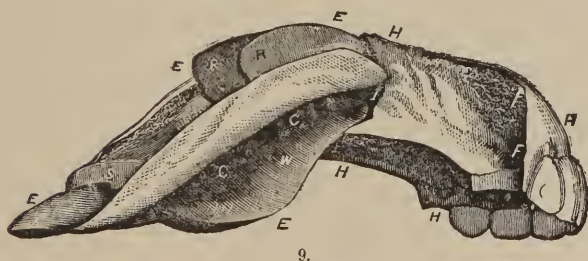
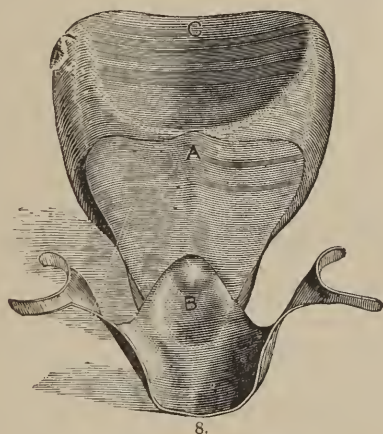
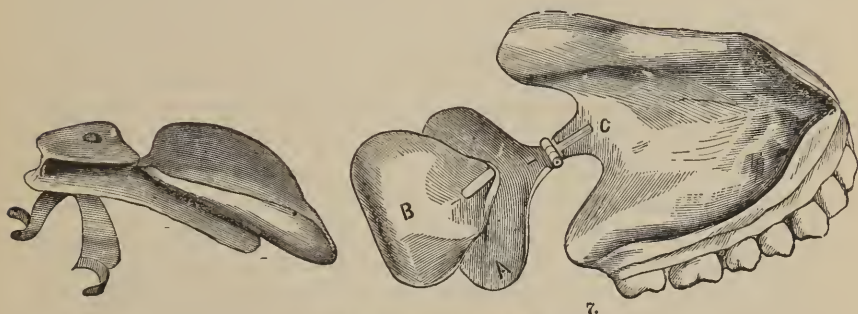
The following figures show some of the forms in which obturators are made:



Figures 1, 2, and 3 are applied to perforations of the hard palate, and Figures 4 and 5 to congenital defects of the soft palate.

An artificial velum is not a stationary stopper, but an elastic movable valve, under the control of the surrounding and adjacent muscles, closing or opening the passages at will, and is applicable especially to congenital fissures, occasionally when the soft palate has been destroyed, but never to perforations of either the hard or soft palate.

The accompanying figures illustrate some of the forms of artificial vela. When in use they are sustained in place either by a connection with the natural teeth, or in the absence of such by a connection with artificial teeth.



The age at which it is best to introduce an instrument of this kind becomes a question of importance, and at as early an age as the patient would take an interest in developing its benefit would undoubtedly be preferable.

The improper position in which some of the organs of speech are placed in the efforts of the patient to articulate distinctly becomes so habitual as to be almost impossible to overcome, and consequently the earlier the age at which it is attempted before these habits become firmly fixed the better.

The earliest age at which the author has introduced an artificial palate was six years, but the results were not so encouraging as to justify a repetition of the experiment at that age. The temporary nature of the teeth to which attachment must be made, together with the lack of interest in the expected benefit, are sufficient to overbalance any advantage that might be gained in the prevention of bad habits of speech. In most instances it is not desirable that efforts of this kind should be undertaken before about the period of the eruption of the second permanent molars. The maxillæ at that time have attained nearly or quite their full size, and are not likely thereafter to change so much as to require a different form or size of appliance.

There is no limit to the advance of age at which an artificial palate may be introduced. The desire of the patient, after a recognition of the probable difficulties to be overcome, would be the principal governing motive. In one instance in the author's practice marked benefit was derived from its use within a few weeks after its introduction for a lady over sixty years of age; but it is not advisable to encourage patients of that advanced age with the hope of very much improvement of speech. The benefit to be derived from the use of an artificial palate depends upon the intellectual status, the application, and the perseverance of the patient. The responsibility of the result rests solely with them after an appliance best adapted for the purpose has been introduced. Results cannot be guaranteed. All that can be said is that appliances can be made which can be worn with freedom from discomfort, and that a large number of persons have made such use of them as to completely hide in their speech any evidence of the deformity.

The improvement is sometimes rapid and remarkable, in other cases slow and tedious, showing in the latter a want of application, an insensibility to the defect, and a dulness of capacity.

The result must be accomplished by the same character of application and training as would be given by an adult to the mastery of a foreign language or of a musical instrument.

One of the best methods of practice is the effort to acquire with it the use of a foreign language: the mind thus becomes diverted from the habit into which it has fallen, and it is sometimes easier to learn to speak a foreign language well than to break up the habit of speaking one's vernacular badly.

There are certain habits which cleft-palate people involuntarily acquire which are no detriment to them in learning to speak French. Such persons are always endeavoring in their speech to compensate for the escape of their voice through the nares by a contraction of the nostrils. The *compressor nasi* comes to be with them an organ of speech. The resonance thus given by the nasal cavity destroys the perfection of their English, because the nasalization of every sound of the English language, save three, affects its purity; but with the French, nasalized sounds form an important part of the language.

Experience shows that it is far easier to acquire a foreign language in youth than in maturer years, and for that reason it is better that all cleft-palate cases come under treatment at the earliest age admissible.

With an instrument scientifically adapted to the peculiarities of each case, and a training by some one who understands the mechanism of speech, there is no reason why every youthful person with such a defect may not overcome it entirely within a few months.

VACCINATION.

The improved method of treating small-pox by the free admission of fresh air into the patient's room, the avoiding of everything heating or stimulating, the use of cooling drinks, conjoined with other appropriate remedies, and the introduction of inoculation into England by Lady Mary Wortley Montagu, in the year 1721, had greatly diminished the mortality from that loathsome and dangerous disease; but it was not until 1798 that the illustrious Jenner announced the fact that the human system could be effectually and permanently secured from its influence by vaccination. In the course of two or three years from the time that this benefactor of his race began to promulgate his invaluable discovery—the most important recorded in the annals of medicine—the practice of vaccination had almost superseded inoculation throughout the kingdom, and is now known in the most remote countries in every quarter of the globe.

A tradition, which had long existed among the peasantry in different parts of England led Dr. Jenner to observe that in the dairies of Gloucestershire the cows were subject to an eruption on

their teats and udders, which was sometimes communicated to the hands of the persons engaged in milking them, and was attended in most instances by a slight degree of fever. He also observed that those who had undergone this disease, known under the name of cow-pox, were never afterward liable to small-pox, either by inoculation or by exposure to the most active contagion. After carefully investigating the causes and effects of cow-pox, during a period of upward of twenty years, he satisfied himself of the correctness of the fact, that vaccination produced such a change in the constitution as effectually to preserve it from the influence of the contagion of small-pox. He also maintained that both these diseases were essentially the same; and this has since been rendered probable, both in England and in Germany, by experiments, which have served to prove that the cow receives the small-pox by inoculation, and changes it into vaccine. This, if again introduced into the human body, produces the true cow-pox. He also established the identity of the cow-pox with the disorder called the *grease* in horses. It has since been ascertained that cow-pox may be communicated to man from the horse, without the agency of the cow; and it is now generally understood, contrary to the opinion entertained by Jenner, that the disease may originate in the cow without access to horses.

Children, if healthy, and their skin perfectly free from every kind of eruption, should be vaccinated before the process of teething commences. The most suitable age for the operation is about the fourth or fifth month after birth. The vaccine matter, or lymph, as it is commonly called, should be taken from the pock, or vesicle, between the fifth and eighth days; and, if circumstances admit, should be inserted in a recent state. It ought to be perfectly limpid and transparent. The operation is very simple. The operator having grasped the child's arm with a sufficient degree of firmness to keep the skin tight, should make two small oblique punctures, by means of a clean sharp lancet, charged with lymph. The punctures should be made merely below the scarf-skin, so as to place the matter on the surface of the true skin, from which absorption rapidly takes place. No blood should be drawn. A single *full* drop of blood is apt to dilute and wash away the matter inserted. A *particle* of blood usually follows the puncture, showing that it has reached the true skin, and does not interfere with the success of the operation. It will also be proper to charge the point of the lancet a second time with lymph, and wipe it upon the wounds. This precaution is particularly necessary, if the skin be unusually tough or the lancet blunt; circumstances which in the first instance may have prevented the matter from entering the wounds.

The effects of vaccination are thus accurately described by Mr. Bryce: "About the third day after the insertion of the virus of cow-pox, either by puncture or by slight incision in the arm, a small inflamed spot may be observed in the part where the inoculation was performed. Next day this spot appears still more florid, especially if the person be warm; and by passing the point of the finger over it, a degree of hardness and swelling in the part is readily perceived. On the fifth day a small pale vesicle occupies the spot where the inflammation was, and the affection begins to assume the characteristic appearance of cow-pox. In place of inflammation extending round the base of the vesicle at this period, as is common in small-pox and most other pustular diseases, the whole has a milky-white appearance. The vesicle is now turgid, but evidently depressed in the centre, while the edges are considerably elevated. For the next two days, the vesicle increases in size, and retains the same character; so that by the seventh it has acquired very considerable magnitude, and is of a circular form if the inoculation was performed by a puncture, or of an oblong form if done by an incision; but in both cases the margin is regular and well defined; while the centre, becoming still more depressed, and a small crust forming there, and the edges becoming more turgid, give the whole a very particular appearance and character, which, in my opinion, may readily serve to distinguish this affection from every other.

"About the eighth day from the time of inoculation the glands in the armpit become a little swelled, occasioning pain and stiffness on moving the arm. Headache, shiverings, a frequent pulse, and other febrile symptoms take place; and these have been observed to continue from a few hours to two or more days. These symptoms, however, are in general so slight and transient as to require no aid from medicine."

The dark-colored scab becomes gradually detached, and drops off about the twenty-first day after the insertion of the lymph, leaving an indelible scar, which is of a circular shape, depressed, and indented with several small pits, corresponding to the number of cells of which the vesicle had been formed.

Sometimes, in consequence of a bad habit of body, certain conditions of the atmosphere, the use of impure lymph, or other causes with which we are acquainted, vaccination is rendered imperfect, and does not run through the regular course above described. In such cases the part appears to fester, and is affected with a very troublesome itching. The pock, on the fifth day, is filled with opaque, straw-colored matter, which has no resemblance to the clear limpid fluid contained in the true cow-pox vesicle. The scab which afterward covers the part is of a yellow color, and falls off on the

tenth or twelfth day, sometimes earlier. The above are the usual appearances which result from imperfect vaccination; but severe inflammation, ulceration, the formation of scales, and other phenomena may be manifested; all of which may be easily distinguished from the uniform signs of cow-pox. When any of these irregular appearances occur, it is advisable to allow the parts to be perfectly healed before revaccinating the child.

REVACCINATION.

It is known by experience that many persons need to be *revaccinated*. Therefore it is advisable to renew the vaccination occasionally, especially *when exposed to an epidemic*. The operation may be repeated a number of times during the lifetime of an individual. It is certainly the safest course, and as it is not likely to do harm, and may save life, we should not hesitate to resort to it. Small-pox very rarely attacks those who have been revaccinated. We should always consider, also, that the first vaccination may have been unsuccessful, through carelessness in the operation, or from some other cause.

Dr. F. P. Foster, our best authority on this subject, writes: "Vaccinia usually runs its course without complications. Excessive erythema (falsely called erysipelas) sometimes occurs, but always yields readily to simple local treatment. True erysipelas occasionally follows vaccination, as it does any other wound, and in infants it is very dangerous. Eczema, as well as certain other affections of the skin, sometimes arises soon after vaccination."

Much fear has been felt that certain constitutional diseases might be conveyed by vaccination. In very rare instances this has occurred in the case of syphilis. It may be prevented with certainty by using *animal* vaccine and a perfectly clean instrument. In persons already tainted with latent scrofula or syphilis vaccination may rouse the disease to activity. Modified small-pox (varioloid) frequently occurs in vaccinated persons, but severe small-pox after a recent and thorough vaccination is exceedingly rare, except in cases in which vaccination was done after the system had already become infected with small-pox.

"Suppose an unvaccinated person," says Mr. Marson, "to inhale the germ of variola on a Monday, if he be vaccinated as late as the following Wednesday the vaccination will be in time to prevent small-pox being developed; if it be put off until Thursday the small-pox will appear, but will be modified; if the vaccination be delayed until Friday it will be of no use."

VARICOSE VEINS AND ULCERS—VARICOCELE.

A varicose vein is generally of a blue color, sometimes of a brownish hue, is considerably increased in size, appears knotted, irregular, and winds in a serpentine manner beneath the skin. Sometimes several veins enlarge in this manner within a small space, and appear coiled up, or, as it were, interlaced with each other, so as to form an irregular dark blue-colored tumor under the skin. In other cases the enlargement or dilatation is partial; and round, circumscribed, elastic swellings or knots appear at irregular distances along the course of a vein. Varicose veins increase in size when the individual is engaged in any active exercise, or continues long on his feet; whereas, on the other hand, repose, the horizontal position, and pressure cause them to diminish, or disappear altogether.

All veins are not equally liable to this disease; those which are deeply seated in the limbs or in the internal parts of the body very seldom become varicose; this morbid alteration of structure is, on the contrary, very common in the veins situated immediately under the skin. The superficial veins of the legs and thighs are most subject to this disorder. Those on the fore-part of the abdomen and about the *scrotum* (*varicocele*) are not unfrequently affected; but it seldom attacks the veins of the arms. When the veins about the lower part of the rectum and anus become varicose, the disease is then called piles.

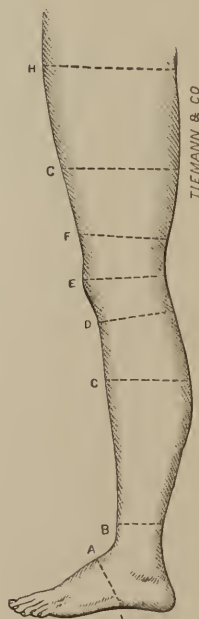
Symptoms.—At the commencement of the disorder, one or more veins, commonly one of the lower extremities, sometimes of both, are observed to be larger than natural, but not attended with pain or any inconvenience. The dilatation and change of structure of the vessels advance very slowly. A year or two, or even a much longer period, may elapse before the patient is induced to pay particular attention to the disease. At length he observes, after walking or remaining long on his feet, that the veins become considerably distended, while the skin over them feels hotter than natural. Resting in the recumbent position soon removes these symptoms, but they are readily brought on again by the same causes. The veins being frequently distended in this manner, at last become permanently dilated, acquire a tortuous appearance, and roll under the skin. As the disease advances, the patient, after any active exercise, experiences a painful sensation of tension in the dilated veins, accompanied with numbness, swelling, and perhaps shooting pains in the limb, which may render him for a time incapable of walking. These symptoms are always aggravated towards night, and again diminished in the morning.

Nature alone sometimes subdues and expels this disease. In other cases again it continues to get worse, and occasions disorders of the limb of the most serious nature. But in the majority of cases it remains almost stationary; and, although it may give rise to considerable pain at times, is rather to be considered as an inconvenient and troublesome affection than important or dangerous.

The accidents to which this disorder may give rise are loss of blood from perforation or rupture of the veins, the formation of painful ulcers over the affected parts, and sometimes inflammation of the veins.



LEG SHOWING VARICOSE VEINS.



ELASTIC STOCKING.

Treatment.—We know very little of the nature and causes of varicose veins, and are equally ignorant of any effectual method of curing them; but it has, nevertheless, been proved by experience that we have it greatly in our power to retard the progress of this affection, to alleviate the pain, and to reduce the swelling by a properly-regulated and permanent compression. For this purpose a laced stocking is generally employed; and this, with rest in the horizontal position, are the grand means of palliating the disorder.

When the veins or the adjacent parts become inflamed and painful, *leeches* should be employed, and *vinegar and water*, *Goulard water*, or any other cold lotion, ought to be constantly applied to the parts. Sometimes cold applications do no good; in such cases, bathing the part with a warm *decoction of poppy-heads*, or warm water with laudanum, will be found serviceable, and more agreeable to the feelings of the patient. The bowels should be freely opened by means of *calomel* and *jalap*, followed by *Seidlitz powders*, *Epsom salts*, or any other cooling saline purgatives. Low diet and quietude in the recumbent position are to be strictly enjoined until the inflammation be entirely subdued.

The treatment is the same as for other ulcers. (See Ulcers.)

VARIOLOID.

A modified form of small-pox, as in the case of persons vaccinated. (See Small-Pox.)

VENEREAL DISEASES. (See Syphilis; also Gonorrhea.)

VENESECTION—BLEEDING.

The operation of bleeding from a vein. For this purpose the veins at the bend of the elbow are generally preferred.

VERTIGO, OR DIZZINESS.

This is a symptom of a large variety of nervous conditions. It sometimes indicates some serious disease, and sometimes is a mere occasional and temporary annoyance.

There are persons who are subject to attacks of vertigo. They become giddy, and reel like one intoxicated. Their vision becomes blurred, there is sickness at the stomach. These attacks may last a moment or two, or several hours.

Causes.—Vertigo may be caused by anything that injures the nervous system—excessive mental labor, abuse of the appetites, loss of sleep, anxiety—all causes and combination of causes that bring on dyspepsia, constipation, nervous exhaustion, and other nervous diseases. (See Nervous Diseases.)

Vertigo often causes unnecessary alarm. Patients who are subject to the attack fear that it may lead to something worse. They fear lest it may lead to apoplexy, epilepsy, or insanity. This fear,

though very natural, is, *as a general rule, unfounded*. In the majority of cases, patients who suffer from apoplexy, epilepsy, and paralysis do *not* have these attacks of vertigo before the attack.

Frequently those who for years have been subject to attacks of vertigo, die of some disease that has no connection with the brain.

Treatment.—There is no specific treatment for vertigo. The treatment, hygienic and medical, is precisely the treatment for nervous diseases in general. (See Nervous Diseases, Treatment of.) The *zinc combination* is of value in most forms of vertigo.

Ergotine in doses of two or three grains (.13 or .19 grams) is good. Digitalis in very small doses is advisable.

VISION, DOUBLE. (See Eye, Diseases of.)

VOMITING OF BLOOD—(*Hæmatemesis*.)

Causes.—Vomiting of blood sometimes takes place in consequence of a blow on the stomach, from riding a rough-trotting horse, from strong mental excitement, or other accidental causes; but in general it arises from disorders of internal organs.

In malignant diseases of a putrid character, where the blood itself is diseased, as in small-pox and malignant or putrid fevers, in which dark-colored spots appear in the skin, vomiting of blood is a symptom which indicates extreme danger, and is generally to be considered as the forerunner of death.

In warm climates, vomiting of blood not unfrequently occurs from an obstruction in the liver or enlargement of the spleen. It sometimes proceeds from constipation of the bowels, or may be caused by a simple or a cancerous ulcer in the stomach; it occasionally arises in young unmarried women, in consequence of suppression or diminution of the menstrual discharge, and in the latter case is more alarming in appearance than really dangerous. The danger principally proceeds from the source in which the hemorrhage originates.

It is of importance, in every case, to ascertain whether the blood is discharged from the stomach or from the lungs. In the *former* case, the vomiting is usually preceded by a sensation of weight, anxiety, and sometimes pain at the pit of the stomach; is not accompanied by cough, or any uneasiness about the chest; the blood is usually in considerable quantity, of a dark color, not frothy, and mixed in most cases with portions of food. When the discharge proceeds *from the lungs*, the blood is generally in smaller quantity, of a brighter red color, frothy, and not mixed with the contents of

Plate V.



POKE WOOD. *Phytolacca Decandra.*



BITTER SWEET. *Solanum Dulcamara*



SPIKENARD. *Analis Racemosa*



BLOOD ROOT. *Sanguinaria Canadensis*



POISON IVY. *Rhus Toxicodendron.*



PLEURISY ROOT. *Aletris Tuberosa.*

the stomach; a feeling of heat or other symptoms of uneasiness are felt at the chest; and the patient in most cases has been previously affected with cough, or has shown other symptoms of a disordered state of the lungs. Hemorrhage from the lungs is always a more formidable symptom than when it proceeds from the stomach, inasmuch as in the former case it is generally a symptom of pulmonary consumption. (See Spitting of Blood.)

Treatment.—In the great majority of cases, vomiting of blood from the stomach is merely symptomatic, and not a disease in itself; our remedies are therefore to be directed to remove the disorder on which it depends. If it arise from derangement of the menstrual function, the reader will find the necessary instructions in their proper place. If it proceed from constipation of the bowels, the treatment will be found under that head. In warm climates enlargement of the spleen sometimes takes place suddenly from congestion of blood, and gives rise to hemorrhage from the stomach.

In every case it is advisable to give the patient cold drink—spring water—*iced water*, if it can be procured—or an *infusion of tamarinds*. Bodily and mental quietude are absolutely necessary; and the diet for some time should be of the very lightest quality, and in small quantities; bits of ice swallowed; ice also applied externally to pit of stomach by a cloth or ice-bag.

Ergotine is injected hypodermically by some physicians.

The following prescription is good:

Gallic acid, 2 scruples (2.5 grams),
Dilute sulphuric acid, 40 drops (2 grams),
Water, 2 ounces (64 grams),

Dose.—A tablespoonful in water.

The *oil of turpentine*, in doses of twenty to thirty drops (1 to 1.5 grams) in cold water, every four or six hours, has been employed successfully to arrest the vomiting. It will be necessary to give brandy, in small quantities, at short intervals, if the patient be much exhausted.

VOMITING, OR REGURGITATION.

Sometimes the habit of vomiting becomes so persistent as to deserve to be called a special disease. It is frequently a symptom of a large variety of diseases, and especially of dyspepsia and of inflammation of the stomach. (See Dyspepsia; and Stomach, Inflammation of.)

The form of which I speak here is rather a nervous disease, not depending on any inflammation. It seems oftentimes to be an affection of the *pneumogastric nerve* that supplies the stomach.

When a person is troubled with obstinate and persistent vomiting, all that we can do is to try in succession the following remedies, until we hit on the one that meets the case :

1. Oxalate of cerium, in doses of from one to three grains (.06 to .19 gram), or salicine in ten-grain (.66 gram) doses before meals.

2. Fowler's solution of arsenic in one-drop doses.

3. Subnitrate of bismuth, in doses of from five grains to half a drachm (.32 to 2 grams).

4. Electrization, general or localized. (See Electro-Therapeutics.) The disadvantage of this very excellent method of treatment is that very few are situated so that they can avail themselves of it.

5. Creosote, in doses of one, two, or three drops in water.

The diet should be carefully studied. Each case is a law unto itself. I have at the present time under treatment a patient whom, at one stage of his illness, a piece of cracker would apparently injure, but who could at the same time eat a hard-boiled egg with impunity.

For vomiting of *pregnancy* take—

Oxalate of cerium, 10 grains (.65 gram),

Subnitrate of bismuth, 30 grains (1.94 gram).

Make ten powders. Take one five times a day.

WARTS.

The excrescences from the skin called warts may appear on any part of the body, but they occur most frequently on the hands.

Warts have sometimes narrow necks, more frequently broad bases; they may be quite superficial, or attached to the parts beneath by roots; their surface is smooth, or rough and fissured; and they are not in general painful, unless when bruised or otherwise injured. The popular opinion that warts may be propagated by the blood, which they sometimes discharge when rubbed or roughly touched, is incorrect; but it appears probable that the matter secreted by soft warts is capable of producing a similar affection in other persons.

Treatment.—Warts frequently disappear without treatment, but in many cases they increase in size, become troublesome, and require to be removed. Pass a pin through the wart. Apply one

end of the pin to the flame of a lamp; hold it there until the wart *fries* under the action of the heat. A wart so treated will take final leave. This method of treatment is warmly recommended. The best method of removing hard warts is to cut them off with a knife or scissors, and then apply caustic to destroy their roots. These excrescences may be destroyed by touching them repeatedly with *lunar caustic*, *blue vitrol*, or *nitric acid*; or they may be effectually removed by the application of the *chloride of zinc*. A wart with a narrow neck may be easily destroyed by fastening round it a silk thread or a horse-hair. After it drops off the roots should be touched with caustic, to prevent it from growing again. A good application for destroying warts about the anus or genital organs is a powder composed of equal parts of the powder of *savine-leaves* and *verdigris*.

WATER CURE, OR HYDROPATHY.

Water has been used in the treatment of disease from the earliest times. By the example and influence of Priessnitz, the system called hydropathy was established in Germany. This system consisted in using water as an *exclusive* method of treatment for nearly all diseases.

Hydropathy has been, is now, and always will be more or less successful in a variety of diseases. *All good physicians make a greater or less use of water in the prevention and treatment of disease; but no good physician depends on water for the treatment of all or the majority of diseases.*

Some of the processes of the water cure are decidedly beneficial in many diseased conditions; others are severe, violent, are adapted but for a few, and in many instances have done great harm.

Among the processes of hydropathy I may mention the following:

RUBBING WET SHEET.

A coarse sheet of linen or cotton, wet, and wrung out more or less, is thrown over the patient's body. The assistant then rubs the patient over the sheet from two to five minutes, until the surface of the body becomes warm.

The shock of the wet sheet is at first disagreeable; but in many cases the effects are most agreeable.

SHOWER-BATH.

This is a powerful tonic, but it must be used with caution.

There are many—very many—who cannot use the shower-bath. Some persons who are quite strong cannot endure the shock. For others, it is a most agreeable and beneficial luxury. Each case must be studied by itself.

WET-SHEET PACK.

A linen or cotton cloth is wet and wrung out, is spread on a bed which has previously been prepared by removing the usual clothing, and placing on it some flannels and comforters. The patient, undressed, lies down on the sheet. The sheet is wrapped closely about his body, and over all are folded the flannels and comfortables. The patient remains in the pack from ten to twenty minutes. To some patients the sensations of these packs are delightful. Like all the processes of the water cure it should be used with caution.

SITZ-BATH.

In this process the patient sits in a tub, in which there is sufficient water to cover the hips, from five to twenty-five or thirty minutes.

WET BANDAGES AND COMPRESSES.

These can be used by every family. A piece of linen or cotton may be wet and wrung out, and placed over the stomach or bowels, and *over this* may be placed a piece of flannel or oiled silk. The cloth may be kept in place by tapes or pins. I have found this treatment to afford great relief in *dyspepsia*.

A wet compress may be placed about the neck in the same way in sore throat. *Spongio-piline* is a good form of compress. (See *Spongio-piline*.)

DOUCHES.

A douche is a stream of water that falls from a certain height upon any part of the body. For domestic use the common pump or spout will afford a fall of a few inches, that may be sufficient in the treatment of *sprains*. Another way of using the douche is for the attendant to stand on a chair and pour water from a pitcher or pail on the part desired to be affected. (See page 412.)

DIFFERENT FORMS OF BATHS.

The *cold bath* is a tonic. Like other tonics it must be used with caution, and with the limitations that have already been described. Many cannot use it at all. The *tepid and warm bath* is

slightly tonic and sedative; it induces sleep. It is well to take tepid or warm baths before retiring. Tepid and warm baths relax the skin and predispose to *taking cold*. They should not, therefore, be taken in the morning (except when they are followed by a cold bath), but rather after the exposure of the day is over.

Hot baths are debilitating when they are used for any length of time. It is rarely beneficial to take hot baths unless they are followed at once by the toning influence of cold affusions or showers. (See Turkish and Russian Baths, under Hygiene.) *Local* applications of *hot water* are frequently of great benefit.

SEA-BATHING.

This is a method of employing water that, in a vast number of cases, is as beneficial as it is agreeable. It will not, however, answer for all.

It is well for invalids to take medical advice before taking a course of sea-bathing. The feeble should always begin cautiously. A course of sea-bathing acts beneficially in these ways:

1. *By the direct tonic effects of the water*, when directed with force against the body. Fresh water in the form of the shower-bath or the *douche* is also a powerful tonic.

2. *By the absorption of the salts of the sea*. These salts are really medicinal in their characters.

3. *By the air of the sea*. Sea air is impregnated with minute quantities of saline ingredients. These are continually breathed into the lungs, and influence the general system. Sea air is not always beneficial to consumptives. (See Pulmonary Consumption.)

4. *By the rest and sleep which are enjoyed by the sea-side*.

The air of the sea acts upon many like an agreeable anodyne. It induces sleep. Sleep is food. It is the food which over-tired brain-workers especially need.

Some persons are made sick by sea air. As soon as they visit the shore they are troubled with nausea, indigestion, and headache.

Mountain air should be sought by those who are not benefited by a residence on the shore. Mountain air is a powerful stimulating tonic. It is rarely injurious, except to those whose lungs are exceedingly weak, or who have some idiosyncrasy against it.

WATER ON THE HEAD, OR HYDROCEPHALUS.

(See Dropsy of the Brain.)

WATERS, MINERAL AND MEDICINAL.

The opinion of the physician is very frequently asked concerning the various springs, baths, and waters that are so much landed in advertisements.

Without specifying any particular name, I may make a general reply to the query in this way:

1. *All of these waters really or apparently benefit some of those who try them.*

If a thousand patients afflicted with a variety of diseases were to visit some advertised and highly lauded spring that should contain nothing but pure distilled water, unquestionably more or less would be apparently benefited, and some would probably become enthusiastic.

2. *All of these are overrated.* Patients expect too much of them. Advertisements claim more than is true. Those who have been benefited are apt to look only at the successes, forgetting entirely the failures.

3. *Some of these waters are beneficial for some diseases, but none of them will cure everything.*

ELECTRIC BATHS.

My opinion is often asked concerning *electric baths*.

I usually reply that bathing in general is beneficial, and that electricity is a remedial agent of remarkable efficacy, and the effects of the electricity when administered through water in the form of baths may be of a decided character. The currents become diffused through the water, and are not sufficiently concentrated in any one part to be of as much service as local and general faradization and central galvanization. (See Electro-Therapeutics.) I have no doubt that some are really benefited by electric baths, but I should attribute such benefit in part to the effects of the water.

By these remarks I do not wish to be understood as condemning all our mineral springs, iron springs, sulphur baths, hot springs, our Vichy, Kissingen, Saratoga, and other waters; on the contrary, I believe that benefit is often derived from them. I wish both to moderate the enthusiasm of those who happen to receive assistance from any of these waters, and to encourage those who have no faith in them. Those who labor under incurable disease are oftentimes justified in trying anything and everything that offers even a shadow of hope, except to encourage villainy and charlatanism. Those who have gone the round of all these springs, after trying

other means of cure unsuccessfully, have at least the consolation that they have left no means untried.

WEeping SINEW—(*Ganglion.*)

A weeping sinew is a tumor connected with a sheath of a tendon. It may be caused by a sprain or injury of the sinew.

Weeping sinews vary in size from a pea to a hen's egg. Their usual situation is at the back of the wrist, or on the upper part of the foot. These tumors always contain fluid.

The treatment is by a sharp blow with a hammer, by the knife, and by electrolysis.

After the operation a compress should be applied and worn for some time.

Those who are subject to these tumors should wear a rubber band or webbing around the wrist.

WEN—(*Sebaceous Cyst.*)

The little tumor commonly occurring upon the scalp or face, and familiarly known as a "wen," results from an abnormal growth of a sebaceous gland. When small the opening of the duct can be seen, and pressure will cause a little white, curdy matter to be extruded. Later the duct becomes impervious and disappears. The tumor then consists of a sac filled with sebaceous matter, and usually varying in size from a pea to a walnut. It is hemispherical or flattened in shape, quite movable, and always painless. One or more tumors may be present, and the scalp and face are their favorite site. Occurring on the scalp, the growth is generally devoid of hair. Their removal is readily effected by a trifling surgical operation.

WETTING THE BED, CHILDREN. (See Incontinence of Urine.)

WHITE SWELLING.

Scrofulous swelling of the knee-joint.

In scrofulous constitutions there sometimes occurs swelling of the knee-joint, with stiffness and pain. Such knee-joint inflammations are called white swellings, and are to be treated by the internal use of cod-liver oil, quinine, iron, arsenic, and locally by small blisters, iodine, and electricity. In some cases a surgical operation is required.

Hysterical disorder of the knee-joint is sometimes mistaken for white swelling, and therefore erroneously treated.

WHITLOW, OR FELON.

Whitlow is well known to be an inflammatory and exceedingly painful affection of one of the fingers or thumbs, sometimes of one of the toes, generally terminating in the formation of matter. There are three kinds of whitlow, varying in severity, according to the part of the finger in which inflammation is seated.

Symptoms.—In the *first form* of whitlow the inflammation is confined to the surface of the skin at the point of the finger; sometimes it extends round the base of the nail. In the *second form* the inflammation is seated in the cellular substance under the skin. In the *third form* the disease attacks the membrane which covers the bone at the extremity of the finger; and in severe cases extends upwards to the fibrous sheath which binds down and retains the tendons in their position. But it must be kept in mind that these three varieties of the disease are only to be recognized at their commencement, or in mild cases; for it often happens that the inflammation is at first superficial, and afterwards extends to the more deep-seated parts; or it commences in the membranous structures near the bone, and extends outwards. In severe cases, the whole organization of the finger is involved; and if the disorder be improperly treated, the bone is destroyed, and one or two of the joints may be lost, or rendered rigid and useless.

The *first*, which is much the mildest form of the complaint, usually arises from a prick or slight bruise of the finger, particularly when the injury is inflicted at the root of the nail.

The pain at the commencement is slight, and accompanied with a sensation of itching; the part soon becomes slightly swollen, red, and shining, while a feeling of throbbing is experienced at the point of the finger. After twenty-four or forty-eight hours—sometimes not until the expiration of three or four days—the scarf-skin or cuticle rises from the true skin, so as to form a vesicle filled with a turbid, reddish, or yellowish-colored fluid, which may be situated at the end of the finger or at the root of the nail; and then the pain, which had gradually become very distressing, and even so severe as to prevent the patient from sleeping, is much abated.

When the vesicle bursts and the serous fluid is discharged, the true skin appears, covered with a thin layer of yellowish-colored matter; or it is slightly ulcerated, or even perforated, so as to communicate with the cellular substance beneath. (See Erysipelas.)

If at the commencement the whole of the inflamed part and some distance round it be gently touched with lunar caustic, the disorder may be very quickly and completely arrested in its progress. But if this method of treatment be not resorted to at an early stage of the inflammation, or if it be employed without producing the desired effect, it will then be proper to apply warm poultices of linseed or bread, moistened with laudanum, until a vesicle, as above described, makes its appearance. This should be punctured early with a lancet, or sharp pen-knife, or cut open with scissors, in order to allow the matter to escape. The poultices are to be continued for two or three days, and afterwards common *cerate*, or any simple dressing, may be applied. Under this treatment the ulcerated part readily heals, new scarf-skin forms over it, and the finger soon assumes its natural appearance. In some instances matter forms under the nail, which is detached in consequence, and falls off; but this loss is supplied, after a time, by the formation of a new nail.

In the *second* form of the disease, or that in which the inflammation is seated in the cellular or fatty substance under the skin, the pain is more severe than in the preceding case; and is even, in many instances, very distressing, before the finger presents any appearance of swelling or redness. But these last-mentioned symptoms are not long in exhibiting themselves, although for some time they are not so well marked as the severe pain which the patient feels would lead us to anticipate. In the course of three or four days the swelling gradually increases, until the finger attains twice its natural size; the redness, pain, and tenderness are greatly augmented, and the patient cannot bear the slightest pressure upon the finger. The swelling extends to the palm of the hand; in severe cases the whole hand becomes affected, and the pain shoots upward to the elbow-joint. Matter now forms; and if an opening be not made for its escape, it may accumulate under the skin, from the point of the finger up to the hand, or even extend into the palm of the hand. When at last the matter finds vent and the parts heal, the finger appears greatly reduced in size in consequence of the cellular substance having been destroyed by the suppuration; while the joints, from the adhesions which have taken place, are rendered stiff and immovable, the point of the finger being no longer capable of exercising the sense of touch. In this case—which is easily distinguished from the first by the severe pain and the symptoms of general excitement, which are always experienced for some time before redness and swelling of the finger are manifested—the treatment must be of a more active

description. *A free and deep incision should be made lengthwise at the point of the finger, in order to prevent suppuration, or to give vent to matter if it be already formed. In either case, by adopting this step early, the patient is soon relieved from pain, and the disastrous consequences which would otherwise follow are effectually prevented.* Immediately after the opening has been made the finger should be immersed in warm water ; and as the blood flows from the wound, the patient's suffering ceases. This simple though painful operation is attended with no risk, and may be performed by any one. The principal point to be attended to is to make the incision sufficiently deep to reach the seat of the inflammation, or the matter, if it be already formed. Emollient poultices are afterwards to be applied ; and in the course of a day or two matter begins to be discharged from the wound, which soon fills up and heals.

In the *third* form of whitlow, whether arising from a punctured wound or from any other cause, the inflammation is seated in the periostæum, or membrane which covers the bone of the last joint, or in the tendons, and their sheaths higher up. There is perhaps no kind of bodily suffering which equals this in intensity ; and the acute pain gives an intimation of the nature of the disorder, which is not to be mistaken. *Making an incision, as already directed, is indeed the only measure on which much reliance can be placed.* To be of service, this should be done *early*, because, if the smallest quantity of matter be thrown out from the membrane of the last bone of the finger, or be pent up within the sheaths of the tendons, which rest upon the second and third bones, the pain becomes so excruciating that high fever is produced, to sleep is impossible, and the patient may even become delirious or be seized with convulsions. Not only the finger but the hand and wrist also become swollen ; the pain extends to the elbow, and even to the shoulder, and, if vent be not given to the matter, it spreads among the tendons, and may even accumulate in the palm of the hand, while the finger-bones become diseased and are destroyed. If under such circumstances the patient escape with the loss of one joint, he may consider himself fortunate. If the last joint of the finger be chiefly affected, the incision should be made as already directed ; but if the pain and inflammation be seated higher up, the cut should be made at one side of the finger ; and care should be taken to carry it down to the bone, whether it be required at the point of the finger or higher up near the hand. The subsequent treatment is the same as in the preceding case.



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ERYSIPELAS

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J. Massonnet

WINE MARK (Nevus)

From Life Photographs Series of Dr. Fox.

WHOOPIING COUGH. (See Hooping Cough.)

WIND IN THE STOMACH—TYMPANITES—
FLATULENCE.

A collection of wind in the stomach is called tympanites or flatulence. When the distention of the abdomen is so great as to be serious, the term tympanites is used instead of flatulence. This symptom sometimes occurs in typhoid fever and inflammation of the bowels. It is treated by stimulants and by passing a long tube through the rectum, through which gases escape. (See also Dyspepsia.)

WINE-MARK, BIRTH-MARK, OR MOTHER'S-MARK—
(*Nevus*.) (See Plate X.)

This purplish stain or birth-mark often covers a large portion of the face, and produces a most unsightly appearance. Heretofore surgeons have been unable to remedy the defect, except by excision or caustics in cases where the mark was quite small. Now, however, large wine-marks are successfully treated by a safe and almost painless process, and removed without even leaving a scar.

WOMEN, DISEASES OF.

In no single department of medical science has greater progress been made within the last twenty years than in that pertaining to diseases of women—by which we mean those maladies peculiar to woman by virtue of her sex. These manifold diseases and derangements are now better understood and more intelligently treated than at any former period in the history of medicine. This advance is due in a great measure to the invention and application of improved means of investigation, enabling the practitioner easily to distinguish between various diseases having complicated or somewhat similar symptoms.

The study of these diseases has doubtless been stimulated by their extraordinary prevalence among all classes of society and in all civilized countries. It would be a long and laborious task to investigate in detail the numerous causes that conspire to render our women the subject of so many distressing maladies. Vast numbers of children are born with the germ of disease, that may remain latent during childhood to be developed in early

womanhood. But supposing a child to be ushered into life with a fair constitution, and to pass safely through the dangers incident to childhood, there begins for the girl a new series of dangers from the very first occurrence of menstruation. Carelessness, exposure, or improper management at that critical age may lay the foundations of life-long trouble. Hence the necessity at that period of maternal care and watchfulness, aided by an intelligent appreciation of the perils to be avoided.

Young women should be early instructed in the care of their own health, with particular reference to disorders of menstruation, since nothing is more common than serious and painful disease solely attributable to exposure, as to cold or wet, through carelessness or ignorance of the dangerous consequences.

Keeping the feet always warm and dry would of itself prevent an incalculable amount of disease among young women, both married and single. But the simplest preventive measures are constantly neglected, at the expense of health and comfort. It seems almost superfluous to explain to women the many evils that result from tight lacing, but the reality and frequency of disease due to that cause are well known to every practitioner of any experience in the diseases of females. By this unnatural compression of the body not only are the lungs injuriously compressed, but all the organs below the waist are crowded down, and the womb must ultimately suffer from the violence to which it is subjected. The circulation, too, is necessarily deranged, and it would be altogether unreasonable to expect a healthy performance of the uterine functions under such circumstances.

Errors in diet, by deranging the general health, indirectly produce or aggravate many uterine diseases.

The abuse of purgatives, especially of the popular quack medicines, is one of the abominations against which women cannot be too emphatically cautioned. Nearly all the pills lauded as remedies for constipation are composed of the cheapest aloes and other purgatives, and their habitual use leads to a morbid condition of the bowels, and consequent uterine disturbance.

Married women are liable to a multitude of diseases, hinging, as does the whole active life of woman, on the organs designed for the perpetuation of the species.

In very early marriages the chances of inflammatory uterine affections are greatly increased, and the danger of miscarriages is also greater than when the organs are mature. Miscarriages at any age are often followed by a long train of evils, many of which might be avoided if it were thoroughly understood that *more care* is neces-

sary after a miscarriage than after a natural labor. Excessive matrimonial indulgence is often a cause of inflammation of the womb, especially if there be any previous displacement.

Displacement of the womb, either backward or forward, is a common affection, and occurs both in married and single women. Recent cases of displacement can generally be treated with success; but old cases, complicated with inflammation or its results, are often very troublesome and tedious. Falling of the womb is a disorder often capable of cure, and almost always of relief. Tumors of various kinds form upon and around the womb, and demand skilled treatment for their relief. Polypus is a growth generally within the uterus, and commonly first suspected on account of a frequent and profuse discharge of blood. Fistulous openings between the vagina and the bladder or rectum may now be cured with tolerable certainty by a surgical operation.

It must be acknowledged that to woman herself is due a large share of the success that attends the management of her diseases at the present day, and every conscientious physician must honor the courage that leads suffering women, for the sake of health, to submit with patience and confidence to means of treatment from which they were formerly debarred by mistaken delicacy and an inconsiderate public opinion. There can be no doubt in the mind of any afflicted woman that it is her duty, at almost any sacrifice, to recover and preserve her health, since upon that blessing commonly depend the happiness and welfare of an entire family.

Indeed, so numerous are the ills to which woman is heir that we have space in this work for only a brief mention of them. It is gratifying, however, to know that they are not now less amenable to treatment than diseases in general.

Abortion, or Miscarriage. (See page 767.)

Amenorrhea, or Suppression of the Menses. (See page 757.)

Barrenness, or Sterility. (See page 1070.)

Breast, Inflammation of. (See page 766.)

Broken Breast, or Milk Abscess. (See page 765.)

Cancer of the Breast. (See page 527.)

Cancer of the Womb. (See page 534.)

Catarrh of the Vagina, Leucorrhea, or Whites. (See page 1074.)

CELLULITIS.

This disease is an inflammation of the areola tissue in front of and sides of the uterus. It is a disease that may be complicated

with peritonitis, inflammation of the ovaries, and inflammation of the womb. It sometimes leads to abscesses. It is quite a chronic disease, or may become chronic. The abscesses that come from it exist for some years, discharging more or less. It is a disease that can be cured or very much relieved; much patience is required, both on the part of the sufferer and the physician.

Causes.—The causes of this disease are abortion, parturition, inflammation of the womb, very severe injury of any kind, excessive sexual intercourse, pessaries, or caustics. A large proportion of the cases come from abortion.

Symptoms.—The symptoms of the acute stage are chills, pain, elevation of the temperature, fever, difficulty of urinating, excessive discharges.

Treatment.—This disease sometimes produces a most serious condition in and around the womb; therefore it requires the best skill of the practitioner in its treatment. The patient should be kept absolutely quiet in bed; this is more important than anything else. A mild and unstimulating diet should be adopted. Surgeons are accustomed to use blisters over the abdominal regions. Warm poultices or towels wrung out of warm water and covered with oiled silk may be applied over the hypogastric region.

CHANGE OF LIFE.

Change of life occurs in women between the ages of forty and fifty. In some instances it does not begin till after fifty or fifty-one. In other cases still it occurs between thirty and forty.

Symptoms.—This cessation of the menstrual flow, to which the term change of life is applied, is, like puberty (the time when the menses appear), accompanied with various symptoms and changes in physical appearance. There is an increase of fat; the breasts begin to diminish somewhat in size, become flatter and harder; and the abdomen enlarges, sometimes to a considerable extent. These changes in physical appearance are accompanied in some instances with various nervous symptoms. One of the symptoms of the approaching change is an increasing irregularity in the appearance of the menses. Various head symptoms appear: fullness, throbbing, and giddiness. There are dyspeptic sensations, and flushings over the face and body. There is sometimes nervousness, irritability, and congestion—the patient becomes fretful, peevish, and melancholy. There is inability oftentimes to control the mind in listening to reading and conversation. In short, very many of the symptoms described in Neurasthenia and Hysteria are

likely to appear. Some persons are troubled with flooding to a considerable amount, or with bleeding at the nose. It is important to be aware of the existence of these symptoms accompanying the change of life, and to be prepared for them.

Treatment.—The treatment is both hygienic and medical. Exercise should be moderate, not severe. Simple remedies should be used. I refer to the articles on Neurasthenia and Hysteria.

There is not usually much more mortality at this period of woman's life than at any other period. These symptoms annoy, but do not kill. Those troubled with these symptoms think they are going to die, but they do not die.

Childbed Fever, or Puerperal Fever. (See page 825.)

Chlorosis, or Green Sickness. (See page 755.)

Conception. (See Pregnancy, Diseases of.)

Cystic Tumors, or Fibroids. (See page 1040.)

Dysmenorrhea, or Painful Menstruation. (See page 759.)

Eclampsia, or Puerperal Convulsions. (See page 1055.)

EXCESSIVE MENSTRUATION, OR MENORRHAGIA.

This subject is treated of on page 761. We add here the following domestic remedies.

Cold and acid drinks should be given, as lemonade, tamarinds and water, etc.

The following is one of the most efficient remedies:

Oil of cinnamon, 1 drachm (4 grams),
Alcohol, 1 ounce (32 grams).

Dose.—One half teaspoonful every ten minutes.

FALLING OF THE WOMB, OR PROLAPSUS UTERI.

Causes.—The causes of falling of the womb are constipation, excessive physical exertion, child-bearing, tumors of various kinds, loss of tone in the walls of the vagina, rupture of the perineum, violent coughing, abdominal tumors. The most frequent cause is rupture of the perineum and inflammation of the vagina and uterine ligaments. The majority of cases in prolapsus occur in those who have borne children.

Symptoms.—Among the symptoms of falling of the womb are drawing about the loins, pain in the back, and a sense of fatigue. Only an examination will make it certain that prolapsus exists.

Irritation of the bladder, great fatigue in walking, leucorrhœa, or whites, suggest falling of the womb.

Treatment.—By various uterine supports (pessaries); by the lying-down treatment; by general tonics; by removing the weight of the clothing off the abdominal viscera.

A decoction of oak bark, to be used cold, injected into the vagina will be found beneficial; a little alum may be dissolved in it. Use the injection twice a day.

As a support for the womb, instead of using a pessary a small sponge can be inserted up the vagina for the neck of the womb to rest upon. A small string should be firmly attached to the sponge, by which it can be withdrawn once or twice a day to be properly cleansed. The injections of oak bark and alum should be used freely each time before inserting the sponge. Any woman can treat herself in the way above described, and with the additional use of proper astringent injections, thrown well up against and around the womb, she may often cure herself without the examination or assistance of a physician. A valuable means of relieving the unpleasant symptoms that attend displacement of the womb, and also of aiding the permanent cure, is by wearing a perineal supporter. One can make it for herself by a little care and painstaking. Make a bandage of strong drilling, eight inches wide, cut so as to accurately fit the hips and lower part of the abdomen, lacing it up in front; put in whalebone front and back to keep it from wrinkling; sew on buttons before and behind, six inches apart, to attach the perineal bands, which may be made of drilling, although strong elastic suspenders are better. Lace the bandage on, buttoning the suspenders on behind, bringing them between the thighs and buttoning them sufficiently tight in front. Where they cross between the passages, sew on a pad half an inch thick, which will press up the perineum and give the needed support.

In some cases surgical operations are necessary. The use of pessaries requires considerable judgment and skill. They should not be employed indiscriminately or recklessly.

FIBRO-CYSTIC TUMORS.

The uterus is very liable to fibroids and fibro-cystic tumors. In some cases these grow very large. The diagnosis usually requires the best skill of the surgeon. (See Fig. 1.)

Causes.—The causes of the disease may be mentioned as follows: First, race—Africans being more liable to the disease than any other class of people. Secondly, age—The period during

which the disease is most apt to develop is between the ages of thirty-five and forty-five.

Symptoms.—Among the premonitory symptoms of fibro tumors are irritability of the bladder, pain in the pelvic regions, profuse discharges. Only careful examination can determine whether these symptoms are due to this class of tumors, or to tumors of the womb, or to other diseases of that organ. Their course is sometimes very slow; they remain sometimes for years without growing very large. Usually at the change of life they cease to annoy to the same extent.

Treatment.—In some cases nature effects a cure by absorption, or by direct expulsion. Some cases are greatly relieved of the pain and of the profuse discharge of blood that usually accompanies these diseases, by the application of electricity. Surgeons treat this disease also by hypodermic injections of ergot, with, in some cases, the most flattering success. Galvanic puncture or electro-puncture can be used with great success in the relief of pain, and even to the extent of sometimes effecting a complete cure.

Fibroids of the womb are now treated by hypodermic injections of ergotine (see Hypodermic Injections), and by electrolysis (see Electrolysis). Internally *chloride of lime* has been given, as in the following prescription :

Liquor of chloride of lime, 4 ounces (128 grams),
Muriate tincture of iron, 1 drachm (4 grams),
Chloroform, 1 drachm (4 grams),
Tincture of orange-peel, 2 drachms (8 grams),
Infusion of columbo, 7 ounces (224 grams).

Dose.—One table-spoonful three times a day.

The hemorrhage may be relieved by the following injection :

Liquor of persulphate of iron, 2 drachms (8 grams),
Water, 3 ounces (96 grams).

FISTULÆ.

This term is applied to tracks or passages between the vagina and rectum, or vagina and bladder. There are various kinds of fistulæ, among them the following: vesico-vaginal, between the vagina and bladder; urethro-vaginal, between the vagina and urethra; recto-vaginal, between the vagina and rectum. These openings are caused by injury, by abscesses, by injury resulting from parturition. The treatment is by difficult surgical operations, that cannot well be described here.

Flexion and Version of the Womb. (See page 1073.)

FLOODING, OR HEMORRHAGE FROM THE WOMB.

In addition to the treatment on page 650, we add the following :

A strong solution or mixture of alum and water, or a decoction of oak bark, may be injected with a small syringe into the vagina, and repeated as often as necessary ; or apply it in the following way :

Wet a wad of cotton or linen, or a sponge, with the mixture, and insert it in the vagina, stopping it well, so as to prevent the flow of blood. This may be allowed to remain during the day or night, until the discharge ceases or the patient is much relieved.

Flooding is often checked also in a short time by applying a lump of alum near the mouth of the womb.

These remedies are simple, effectual, and perfectly safe.

Green Sickness, or Chlorosis. (See page 755.)

Gonorrhœa, or Clapp. (See page 656.)

HEMATOCELE

Is a bloody tumor of the pelvis. This is a disease that is not very common, yet is not infrequently seen by those who give especial attention to the diseases of the womb.

Causes.—It is caused by rupture of the blood-vessels : a cause which predisposes to it is impoverished blood. The causes of chronic diseases of the womb are various : sudden checking of the menstruation ; violent effort or strain. Patients feel as though a large body was in the pelvis ; sometimes a very acute pain ; sometimes unusual vomiting ; sometimes, also, the urine is scanty with a tenderness over the abdomen.

Treatment.—The treatment is mainly by surgical operations. The question whether an operation is necessary or not can only be determined by the surgeon. The patient requires absolute rest. The treatment of the general symptoms is by opium, and sometimes alcohol.

Hemorrhage from the Womb, or Flooding. (See page 650 ; also page 1042.)

Hysterics, or Hysteria. (See page 703.)

Infants, Management of. (See page 1060 ; also 1062.)

Infancy and Childhood, Diseases of. (See page 1065.)

Inflammation of the Breast. (See page 766.)

Inflammation of the Mammary Glands, or Mastitis. (See page 766.)

Inflammation of the Vagina, or Vaginitis. (See page 1071.)

Inflammation of the Womb. (See page 1077.)

INVERSION OF THE WOMB.

This is a rare disease, and should be treated only by experienced physicians. (See Partial Inversion, Fig. 6.)

ITCHING OF THE VULVA—(*Pruritus*.)

This disease is an irritability of the nerves of the external genitals. It is accompanied with a very severe itching, and a desire that cannot be well resisted to scratch the parts. This itching comes and goes; for, as generally supposed, it does not exist all the time: being at one time worse by night, at another worse in the day. Severe cases have been known which caused great loss of sleep and profound exhaustion of the system. Sometimes this itching is excited and made worse by lying in a warm bed, or eating and drinking various foods and condiments.

Causes.—The disease is caused by neurasthenia (nervous exhaustion), by uterine disease, by want of cleanliness, by discharges from the womb, by diabetes, by masturbation.

Treatment.—In some cases there may be animal parasites; these should be treated by remedies adapted for that purpose. (See *Pruritus*, and *Skin Diseases*.) In some of these cases of itching of the vulva, the diseases of the womb associated with it must be treated before there can be any cure.

Sulpho-carbolate of zinc, $\frac{1}{2}$ ounce (16 grams),

Water, 8 ounces (256 grams).

Wash the parts every day.

The following is very warmly recommended:

Carbolic acid, 3 drops (.15 gram),

Glycerine $\frac{1}{2}$ ounce (16 grams),

Water, $\frac{1}{2}$ ounce (16 grams).

Apply to the parts.

Or the following:

Hydrate of chloral, 3 drachms (12 grams),

Water, 4 ounces (128 grams).

Apply to the parts.

Or this :

Hydrocyanic acid, 2 drachms (8 grams),
Liquor of subacetate of lead, 4 drachms (16 grams),
Water, 3 ounces (96 grams).

Labor, Symptoms of. (See page 1051.)

Leucorrhœa, Whites, or Catarrh of the Vagina. (See page 1074.)

Lying-in Chamber. (See page 1052.)

Mastitis, or Inflammation of the Mammary Glands. (See page 766.)

Menorrhagia, or Excessive Menstruation. (See page 761 ; also 1039.)

Menstruation. (See page 753.)

Milk Abscess, or Broken Breast. (See page 765.)

Milk Fever. (See page 766.)

Milk Leg, White Leg, or Phlegmasia Dolens. (See page 815.)

Miscarriage, or Abortion. (See page 767.)

Nipples, Sore. (See page 805 ; also 1058.)

OVARIES, DISEASES OF THE.

The ovaries are liable to different diseases, inflammations, and tumors called ovarian tumors.

Symptoms.—Among the signs of inflammation of the ovaries are difficult menstruation, pain over one or both the ovaries, difficulty in standing and walking, irregular menstruation, sometimes pain on sexual intercourse.

Treatment.—Inflammations of the ovaries are very obstinate in treatment. The use of electricity is one of the best means to relieve pain where its existence is chronic, galvanic currents being employed. Counter-irritation with blisters is much employed by surgeons. In this disease patients frequently need constitutional treatment. (See Neurasthenia.)

In neuralgia of the ovary, use the following :

Muriate of ammonia, 2 drachms (8 grams),
Tincture of aconite, 2 drachms (8 grams),
Syrup of orange-peel, 8 ounces (256 grams).

Dose.—One teaspoonful in half a tumbler of water, three times a day.

Blisters over the ovarian region are also excellent.

OVARIAN TUMORS.

In recent years great progress has been made in the treatment of ovarian tumors. The operation for tumors is in most cases entirely successful, and the greatest advancement of modern surgery is probably in this connection.

Painful Menstruation, or Dysmenorrhea. (See page 759.)

Parturition. (See Pregnancy, page 1045.)

Pelvic Cellulitis. (See Cellulitis, page 1037.)

Pessaries. (See page 814.)

Phlegmasia Dolens, White Leg, or Milk Leg. (See page 815.)

POLYPI, UTERINE.

The uterine polypus is a tumor attached to the womb by a pedicle or stem. There are several varieties of this tumor. The symptoms are quite similar to very many other diseases of the womb, and only a careful examination with instruments can make the diagnosis clear. These tumors can be removed by surgical operations, usually with success. In some cases nature effects a cure by ejecting the mass. (See Fig. 2.)



Fig. 1.
FIBROUS POLYPUS.

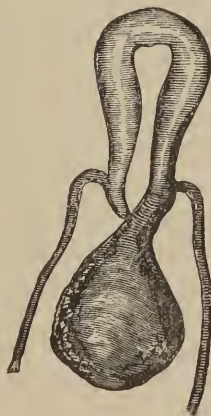


Fig. 2.
POLYPUS UTERI.

PREGNANCY, AND MANAGEMENT OF INFANTS.

Signs and Symptoms of Pregnancy.

Symptoms.—When pregnancy has taken place, the face usually becomes pale, the under part of the lower eyelid is of a leaden hue, the features become sharper, not unfrequently the person be-

comes thinner, and the temper is often more than usually irritable; sickness in the morning and after meals, feverishness, indigestion, heartburn, languor during the day, disturbed sleep and disagreeable dreams at night, are often the accompaniments of pregnancy. A sense of bearing down, an irritation about the bladder and the seat, and a frequent desire to pass water, are also not uncommon symptoms.

State of the Navel.—This, many believe, presents one of the most decisive evidences of pregnancy. The navel is drawn inwards and downwards during the two first months; in the third it is natural; in the fourth it is not so hollow as before conception; in the fifth and sixth it is almost level with the surrounding surface; in the latter part of the sixth and the seventh month it is quite so; while towards the latter month of gestation it projects considerably. If these symptoms follow in regular succession, it may be considered a decisive sign of pregnancy.

Ceasing to be Unwell is one of the most common, and generally an early symptom of pregnancy; but it is by no means a certain sign, as it may arise from many other causes; if the monthly sickness has been regular up to the time of marriage, it is good presumptive evidence. Such, however, are the caprices of nature that in some persons this evidence is never decidedly manifested: in such cases it will usually be found that the discharge is smaller in quantity, returns at irregular intervals, and does not last the usual time.

Enlargement of the Breasts.—This is an appearance which, if unaccompanied by other signs, is of little value; but if it has been preceded by some diminution of their size, and enlargement then takes place about the third month after the preceding sign, and is accompanied by a slightly painful and prickling sensation, with a sort of knotty feeling when the hand is applied to the surface, and particularly if there is occasionally a milky discharge from the nipple, it may be considered presumptive evidence of pregnancy. It frequently occurs that the breasts become enlarged shortly after marriage, from the person growing stouter; but in this case the whole person experiences the same change, and the breasts remain soft.

Swelling of the Nipple and the appearance of the areola or circle surrounding the nipple are by many writers considered as among the most decisive of those signs of pregnancy which are exhibited previous to quickening. In fair women, and particularly with the first child, the change in the areola is very manifest: from its usual pink hue it turns to a dusky brown; it increases in

size, and continues to darken until the term of gestation is completed. As pregnancy advances, a number of slight excrescences, resembling small pimples, also frequently appear thereon; and when the individual has had children, or is of a dark complexion, this appearance is the most striking characteristic of the areola of pregnancy.

Morning Sickness.—This distressing affection of pregnancy occurs chiefly during the earlier months. It may commence almost immediately after conception; but the most usual time of its appearance is two or three weeks after. It arises wholly from sympathy with the newly-established action of the womb. This is neither a necessary nor an infallible sign of pregnancy, as sickness may arise from other causes, and by some individuals it is never experienced, while others suffer from it during the entire period. It may be observed, however, that it does not generally affect the health, nor does it usually impair the appetite.

Enlargement of the Abdomen.—At an early period of gestation the abdomen becomes flatter, and it is not until about the third month that the enlargement is very perceptible.

Quickening simply means the first sensation which proves to the mother the vitality of her child. The feeling is so peculiar and so sudden that it sometimes occasions fainting and hysteria. The sensation, which has been compared to the fluttering of a bird, is occasioned by the sudden rising of the womb from the pelvis, where the motion of the child could not be felt, to a part that is more sensible. It is not uncommon for a few drops of blood to escape from the *womb* at the moment of the first sensation. Quickening usually takes place about the fourth or fifth month; but in some cases it occurs as early as the third month, and as late as the fifth. At first the movements of the child are feeble, but in a short time they become strong, and are felt not only internally, but also very distinctly on applying the hand to the abdomen. Instances are of frequent occurrence when the motions of the child are so lively as to occasion much distress to the parent; but this sensation alone cannot be depended on as a proof of pregnancy.

Conditions Simulating Pregnancy.

Cessation of the Menses.—So many diseases may produce this effect that there is not space here to go into particulars; it will suffice to warn those especially who are married late in life that this disappearance, though continued for months, is no proof of pregnancy, although, as before said, if the individual be *young*,

and has been regular up to the time of marriage, it may be considered presumptive evidence.

Enlargement of the Breasts may arise from increased obesity, or from the stoppage of the menses.

Sickness, Heartburn, Languor, Distension of the Abdomen, may all arise from indigestion.

Quickening.—Persons who marry late in life are most liable to be deceived by a sensation of quickening when pregnancy has not taken place; and even medical men have been deceived by it when they have neglected other signs. This mistake is occasioned by the collection of wind in the bowels, which, even to the touch, may simulate the movements of a child.

Enlargement of the Abdomen may arise from dropsy, disease of the ovary, excessive obesity, and many other causes, which bring us to the conclusion with which we set out, viz., that although each of the signs of pregnancy enumerated may be valuable as accessories, yet, isolated, neither is infallible.

Duration of Pregnancy, Mode of Reckoning.

The duration of pregnancy is usually two hundred and eighty days, but it may continue as long as three hundred days, and in very rare cases even longer. In other cases the duration of pregnancy may be only two hundred and sixty days, or even less. It is impossible to calculate the period of labor exactly, but the nearest approach will be obtained by noting the last day on which signs of menstruation were visible, and counting two hundred and eighty days, beginning with the *day after* that on which the flow ceased.

Diet.—It is of the highest importance that women about to become mothers should be generously nourished. An abundance of animal food should be taken, and such articles of diet as have been found to disagree should be carefully avoided. The capricious appetite common in the latter part of pregnancy may be indulged within reasonable limits. All stimulants had better be avoided, or taken only by the advice of a physician.

Dress.—The dress of a pregnant woman should be always loose; tight lacing must on no account be allowed; it prevents the development of the breasts and abdomen, impedes the growth of the infant, causes inflamed breasts, sore nipples, and all the disastrous consequences which result therefrom, occasioning acute suffering to the mother, and frequently depriving her of the comfort of suckling her child. In the advanced stage of pregnancy it will

often produce palpitation of the heart, swelling of the legs and veins, costiveness, and scalding on passing water.

Exercise.—Popular errors upon this subject of a directly opposite character exist, both of which must be avoided. Let mothers pay particular attention to the following remarks: After conception has taken place, but little exercise should be taken for some days; the mind should be kept perfectly quiet, and all causes of excitement avoided. Moderate exercise is, however, proper at every other period of gestation, unless symptoms of miscarriage present themselves. Walking is the best exercise, but it should not be continued until fatigue is produced. Sailing is a very beneficial mode of exercise, if the season be favorable. Long journeys, long walks, and running or dancing should be particularly avoided. Violent exercise is the ordinary cause of floodings from the womb; abortion, rupture, or premature labor may follow; and it should be remembered that miscarriage is far more injurious than parturition at the proper period. Lamentable instances of its effects are continually brought under the observation of every medical practitioner. Few, indeed, whose practice has been extensive have not often seen the young and lovely thus rendered prematurely old, and even hurried to the grave, as a result of miscarriage brought on intentionally or by carelessness.

As the period of parturition approaches, more rest is required than in the earlier months; still, however, air and exercise, if they can be enjoyed without fatigue, will be highly beneficial. But when there is a tendency to miscarriage exercise must wholly be avoided.

Late Hours are highly injurious to the pregnant woman; she should go to bed early, and take from seven to nine hours' repose; common-sense and ordinary experience must force this on her attention; the lethargy and fatigue which affect her towards night; the desire to be disburthened of her clothes, and the refreshment which she experiences by their being loosened, all point out to her the requirements of nature.

The state of the bowels should be constantly attended to, and constipation avoided as far as possible, by diet, injections, and the mildest measures, all violent cathartics being scrupulously avoided.

Diseases of Pregnancy.

Vomiting generally commences shortly after conception, and ceases on quickening. It is usually most troublesome on rising, and hence has obtained the name of *Morning Sickness*, though its

attacks are not unfrequent after meals. Sometimes it is very violent and continues all day, and everything taken into the stomach is rejected. This form of the disease requires great attention and medical advice. The sickness, when not excessive, may sometimes be relieved by a mixture composed of a scruple of bicarbonate of potash or soda dissolved in a wine-glassful of water and taken during effervescence with a table-spoonful of lemon-juice. These draughts may be repeated thrice a day if necessary; or half a tea-spoonful of citrate of potash in water may be taken every hour until the sickness is relieved. Very distressing cases of nausea may sometimes be obviated by taking a small cup of tea or coffee and a piece of toast or bread before rising in the morning, and rising late.

Heartburn and Acrid Eructations denote acid in the stomach, and are relieved by opening the bowels with magnesia, and taking half a teaspoonful of carbonate of soda, or a wine-glassful of lime-water in milk, three times a day, or when required.

Spasms or Cramp of Stomach and Bowels.—If *slight*, fomentations should be applied as hot as they can be borne, and ten drops of laudanum taken every fourth hour. If *very severe*, medical advice must be obtained.

Incontinence of Urine is sometimes troublesome during pregnancy, but rest is the only remedy.

Fainting is most usual during the first three or four months. It generally comes on after exertion, agitation, purging, or exposure to heat. The patient should be laid down with the head low, air should be freely admitted, the dress loosened, the face sprinkled with water, and the forehead and temples bathed with cologne or any refreshing lotion. The same treatment will apply to hysterical convulsions.

Cough.—It is generally dry and difficult of cure, and may depend on so many causes that advice from the medical attendant had better be sought.

Spitting or Vomiting of Blood calls for immediate professional assistance.

Headache.—If severe and constant, and there is fulness of blood indicated by a flushed face, dull or bloodshot eyes, sense of giddiness, heaviness over the eyes or in the head, and the pregnancy is far advanced, advice should be taken without loss of time. All headaches are, however, not dangerous. They may arise from costiveness, indigestion, or nervousness.

Toothache often attacks sound teeth. In such cases extraction is improper.

Irritation of the Bladder, Retention of the Urine, or Difficulty of Passing it, require the bowels to be kept open. Drinks of linseed-tea, barley-water, slippery-elm tea, etc., should be taken freely; and the patient should recline on a sofa. Great care should likewise be taken not to retain the urine long.

Salivation is sometimes very troublesome. Washing the mouth with alum-water, and keeping the bowels gently open, frequently afford relief; if they do not, advice should be obtained.

Pain and Enlargement of the Breasts may be treated by warm fomentations frequently changed.

Swelling of the Feet and Legs.—The bowels should be kept open, and a bandage applied every morning. The swelling usually goes down in the night, and during the day the recumbent position should be maintained as much as possible.

Enlargement of the Veins of the Leg requires the careful application of a thin rubber bandage, and rest in a recumbent posture. This should be attended to by a medical man, as bad consequences often follow neglect.

Cramps of the Legs and Thighs are often relieved by mere change of position. Gentle friction, with soap liniment, six drachms (24 grams), and laudanum, two drachms (8 grams), is frequently very useful.

Despondency, Melancholy, Antipathies, etc.—These are not uncommon. The first two are best remedied by change of scene, air, gentle exercise, cheerful company, and due attention to the diet, which should not only be nourishing, but varied and palatable.

Care of the Nipples.—For a month or six weeks before confinement, especially in a first pregnancy, attention should be paid to the state of the nipple. If it appear healthy, not tender to the touch, and the skin of moderate thickness, nothing more is required than that it should be rubbed two or three times a day with a little sweet-oil, and all pressure from corsets and the clothes most carefully avoided; for this pressure is frequently the cause of soreness and flatness of the nipple. If the nipples are painful, and the skin is thin, they should be washed three or four times a day with any astringent infusion, as of green tea, oak-bark, willow-bark, or brandy or spirits, and exposed to the air each time for ten or fifteen minutes or longer.

Symptoms of Labor.

Generally for some days (it may be two, four, six, eight, ten, or twenty days, or only a few hours) previous to the accession of those

phenomena which characterize the existence of labor, there are often present certain premonitory signs of its approach, which are easily recognized by women who have borne children.

Restlessness, particularly at night, is frequent for days and weeks, and is not to be considered unfavorable.

Subsidence of the Womb and Abdomen is a usual monitor, and may be viewed in a favorable light, as it indicates room in the pelvis or basin of the body. The female feels as if she carried the child lower than formerly, and thinks herself slacker and smaller than she was before; and in many cases, though before inactive and indolent, she now feels lighter and more alert.

Glairy Mucous Secretion, sometimes streaked with Blood, occasionally occurs days before the active symptoms of labor, and renders the parts moister than usual; which are also enlarged, relaxed, and soft, and sometimes painful. The discharge spoken of is commonly known as "a show."

Irritability of the Bladder, and Irritation and Gripping of the Bowels are often present as symptoms of approaching labor. Pains in the back and loins, commonly known as bearing-down pains, may occur at this time. They are *false pains*, but so greatly do they resemble the pains of labor that the medical man only, upon an examination, can distinguish between the two kinds.

The Movements of the Child become stronger and more active, and are felt lower down; and there are also pain and weight in the loins. When the above symptoms occur, it will be well to send for the nurse and make other preparations.

The Lying-in Chamber.

The Bed should be so placed that the room may be well ventilated, without being in a draught. The bed-curtains, if any, should be thin, and never completely drawn round the bed, so that pure air may be freely admitted and the impure air easily escape. The bed should not be against the wall, but placed so that assistance could be afforded on either side if required. The patient is liable, if placed on a feather-bed, to sink into a hole, and thus prevent her medical attendant from being of so much service to her as he might be. She should always lie on a mattress which should be protected by a piece of oil-cloth or oiled silk, and above this a sheet to be removed after delivery; another sheet in the form of a roller should be applied across the bed, having the ends folded in at the sides; a coarse blanket, folded within a sheet in the form of a table napkin, should be laid immediately underneath the patient,

so as to be easily removed after delivery ; the upper sheet, blanket, etc., are put on as usual.

The Dress should be as slight as possible. A loose dressing-gown does very well in the earlier stage of labor, but later a bed-gown and chemise should be worn ; the latter is to be folded round the waist, so that it may be kept dry and be drawn down after labor is over. The lower part of the body should be covered with a petticoat, so made that it can be taken off without raising the person when delivery has taken place.

The corsets should never be worn, but they may be substituted by a broad, double calico bandage, or binder, made with three rows of tapes on each side, so that it can be made tighter as labor progresses, and be used for the ordinary binder afterward. If it is made with straps to come under the thigh from the back, to fasten in the front with a button, it will be kept down better.

Heat of the Room.—This should be regulated by the patient's feelings. If too hot, it will produce fever, add to the fatigue, often render the pains irregular and ineffective, and thus protract the labor.

Attendants.—The only attendants required are the nurse and physician, but a female friend may be allowed if the patient desires it.

Sleep.—If she be disposed to sleep between her pains, she should not be disturbed.

Food.—There is seldom much desire for food, and, if the labor is not protracted, there is no occasion for it ; but if there is an inclination to eat, she may have a little tea with dry toast, soup, sago, or light pudding ; but everything heavy must be avoided.

The Urine should be regularly and frequently evacuated. The bowels, if not open, should be acted upon by taking, as labor approaches, a tablespoonful of castor-oil, or an injection composed of a pint of thin gruel and an ounce of castor-oil. Much comfort is derived from this, and the unpleasant consequences which sometimes take place near the end of labor (if this has not been attended to) will be avoided. On the other hand, if the bowels are too much relaxed, ten drops of laudanum in a wine-glass of water may be given.

Shivering is very common, from a gentle tremor to a complete and violent agitation of the body. Warm tea or gruel, without wine or spirits, will generally relieve it.

Vomiting is not uncommon, and is useful by emptying, perhaps, an overloaded stomach ; it also tends to facilitate the labor.

Cramp during labor is frequent, and may arise from having

been in one position too long, for change of posture relieves it; but if in the hip and thigh, it generally proceeds from the head of the child pressing on a particular nerve in the pelvis, and is not relieved until it has passed that part.

Duration of Labor.—A first labor is generally the most protracted; but under proper management, and with due submission on the part of the patient, it is not more dangerous than subsequent ones.

Napkins, etc.—The nurse will of course have ready a sufficient supply of well-aired napkins, a pair of scissors, a skein of thread, and a proper receiver of flannel for the infant.

Hot Water.—It will also be well to have an abundant supply of hot water in the house, which would be required if the infant should happen to be born in a state of asphyxia, or suspended animation.

Ice.—It is well to provide some ice also, in case it should be necessary to arrest hemorrhage, or for other purposes.

Labor.

Symptoms of Labor.—There is pain in the back and loins, occurring at irregular intervals, and producing most disagreeable sensations; there is also generally a “show;” these sensations continue; the patient becomes uneasy, has frequent warm and cold fits, with urgent desire to pass urine, etc., and is exceedingly restless; every situation and position appears insupportable and uncomfortable to her. By degrees the pains increase in frequency and force; they occur now at regular intervals of ten or twelve minutes, and do not occasion that continued uneasiness they did at first, for when the pain is passed she is pretty easy.

Close of Labor.—When the labor is proceeding rapidly and the pains become bearing down, the bed must be kept altogether. This is what is called the second stage, and having arrived, the patient may assist by exerting her abdominal muscles and diaphragm. To enable her to do this she must not scream, but during pain hold her breath. A towel may be fixed to the bed-post for her to pull by, or she may prefer the hand of another person. If the patient only follow the dictates of nature in this matter, she will do right; for she will find that all that is required is an almost an involuntary exertion of voluntary muscles. Let her, however, be careful to make no straining effort in the absence of pain, during the intervals of which she ought to lie at perfect rest, renewing her strength. As its termination approaches, the patient

must be careful not to give way to feelings of impatience and become restless, but implicitly follow the directions of her medical attendant, otherwise serious consequences to herself might ensue.

How to proceed if the Child be born before the Arrival of the Medical Attendant.—It not unfrequently happens, subsequent to a first confinement, that labor is so rapid and short (two or three strong and powerful pains being sufficient to bring the child into the world) that it is quite impossible for any medical attendant to arrive in time.

Under these circumstances the friends are generally excited and alarmed. There is generally no occasion for this. All that is necessary to do is to see that the child is so placed that it shall obtain plenty of air.

Some nurses will tie the cord and separate the child. There is no objection to this, provided the child is alive and respiration fully established. *But no nurse ought to be permitted to remove the after-birth.* This hint cannot be too strongly borne in mind; for an injudicious interference with the after-birth might be attended with the most serious consequences.

After-pains.—About half an hour or so after delivery, a patient must expect pain again to occur. These pains, however, will differ from those which have just subsided; as they are not attended with bearing-down efforts, and are accompanied by a slight discharge, these are called “after-pains.” They will continue off and on, with more or less frequency and severity, for about eight-and-forty hours. In this respect, however, they vary much in different individuals; but, whether mild or severe, they must be borne with patience, and must not give rise to anxiety, since they are useful and salutary. They do not usually occur after a first confinement.

Puerperal Convulsions—Eclampsia.

Symptoms.—These may be recognized by spasms occurring before and during labor. They usually come on quite suddenly, are very violent, and attended by complete unconsciousness. Usually the whole body is affected, though sometimes only half of it is so. The spasms follow each other rapidly, leaving the patient in a stupor, which lasts from half an hour to two hours.

Treatment.—Inhalations of chloroform, or a mixture of chloroform and ether, are recommended. These remedies, however, should be administered with caution, and only under the direction of a physician, who should be summoned promptly.

After Delivery.

Faintness and Languor frequently occur immediately after the child is born, even in short and easy labors. The medical attendant will in this case order his patient wine, ale, or spirits, in the proportion that may be required.

The Bandage.—The nurse commonly applies the bandage before the doctor leaves the house.

The Dress, Bed-Clothes, etc.—The petticoat worn during the labor may be removed soon after delivery, and the chemise, previously rolled around the waist, brought down. The wet clothes may also be cautiously removed (unless it has been ordered otherwise); but in doing this great care must be taken not to move the patient roughly, or permit her to make any effort. She *must be perfectly passive*, and her attendants will on *no account* raise her from the recumbent position *in the least*. *Fatal flooding has been produced by raising the body to a sitting position.*

The Diet.—The old custom of starving after confinement has cost many a woman her life. The other extreme must of course be avoided, but the patient may generally be allowed a sufficient quantity to satisfy the appetite of light nourishing food, including some meat. Soups and slops are more likely to disagree, and furnish less nutriment. But specific directions as to the most appropriate diet in individual cases can be given only by the medical attendant. Ale and spirits should never be given without advice, but in the absence of explicit instructions it is a good rule never to let the woman complain of hunger. As soon as appetite shows itself, let it be gratified with good nourishing food. Acid drinks may be given freely, if there is much thirst.

The Mind after delivery is often in a state of excitement, and highly susceptible of impressions. It is therefore obvious that anything which could excite emotion *in health* should be guarded against during confinement. For this reason the bedroom should be kept as quiet as possible. Above all things keep friends and acquaintances out of the room, and guard the woman carefully against the fatigues of conversation. By all means encourage sleep, and never allow it to be broken needlessly. After a difficult and exhausting labor, *absolute repose*, mental and physical, is indispensable to a good recovery, and the want of it may endanger the woman's life. All the resources of the pharmacopœia cannot furnish the equivalent of an hour's sound sleep.

Ventilation.—It is necessary that the room be kept well ventilated, and pure air often admitted. For this purpose the windows

should be opened from time to time, and curtains round the bed should not be allowed. Everything that can give rise to an unpleasant smell should be directly removed.

The Lochia, or Discharge.—This varies much as to quality, appearance, and duration in different women, and in the same woman in different confinements. It is sometimes scanty, and sometimes so profuse, especially in those who do not nurse, as to require medical treatment; but, unless it runs into one extreme or the other, it need create no alarm. For two or three days it has the appearance of pure blood; it gradually changes to nearly white; then to a greenish or brownish cast; and at last entirely ceases. It does not always follow this course, but the red color may disappear and reappear two or three times.

Sudden obstructions of the discharge may be occasioned by exposure to cold, and are always alarming; if attended by pain in the abdomen, fever, sickness, etc., the medical attendant must be sent for immediately; but in the mean time let the lower part of the bowels be well fomented, and let some warm diluent, as whey, barley-water, or thin gruel, be given as a drink. Extreme cleanliness during the continuance of the discharge is imperative.

Getting up.—Under no circumstances should the woman be allowed to sit up before the seventh day, and then only if it is evident that she can do so without dangerous fatigue. For several days after first getting up the movements should be very slow and gentle, and the reclining posture must be resumed whenever fatigue is experienced. For every day that women are up too soon they often suffer years of misery in after-life. Some of the most obstinate uterine diseases to which women are subject owe their origin to exertion too soon after confinement, while the uterus is yet large and heavy, and its surroundings weak and relaxed. If the bedroom is cheerful and well ventilated, it is better for the mother to remain in it from two to three weeks, and not to venture out-of-doors before the fourth week.

Of Suckling.—The child should be put to the breast at once—the sooner the better. If there is no milk, the action of sucking promotes its secretion. The nipple should be washed with warm water before applying the babe.

If, as often happens after the first confinement, the nipples are so flat that the infant cannot take hold of them, they should be well fomented, and drawn out by a proper breast-pump; but this must be used with great gentleness and care. When this has been practised two or three times, the child will generally be able to suck. The patient should not be fatigued by the long-continued or

frequent application of the child, and she should place it in a position most comfortable to herself.

Sore Nipples.—If they are tender and sore, the strong infusion of green tea, brandy, or the lotion of zinc—using each daily in its turn—will probably harden the skin, and remove its irritability. If not, try a lotion containing one grain of the nitrate of silver dissolved in one ounce of distilled rose-water; or, what is perhaps better than all, wash the nipple often with the tincture of catechu. These applications should be used freely and frequently during the day, and the part exposed to the air afterward.

If they are not only tender and fretted, but also hot, dry, and very painful to the touch, and yet not clapped, the stimulating applications before advised would only aggravate the mischief. A bread-and-water poultice should be first applied, changed every three hours, and fomentations of warm water, or decoction of poppy-heads, used after each poultice is removed.

When the unnatural heat and great pain of the part are relieved, it must be dressed with a little spermaceti ointment spread upon thin linen.

From the friction, however, of the child's tongue and gums, the skin may have become excoriated, and cracks formed upon the nipple, or around its base. Every time the infant sucks they bleed, and the mother suffers exquisite pain.

The first object in the treatment is this: that the infant shall obtain its nourishment from the breast without its mouth coming in contact with the nipple. This is accomplished by means of shields made of glass or rubber. The shield is neatly covered with an artificial teat, through which the child sucks without biting or irritating the nipple.

The Diet, through the whole period of suckling, should be simple, nutritive, and such as is easy of digestion. If the food taken agrees well with the mother, it seldom if ever disagrees with the infant.

No food agrees with an infant so well as its mother's milk; and for six or eight months nothing else, unless it be absolutely necessary, should be given. After that time it should be prepared for weaning, by having a little thin sago or some of the prepared foods given to it two or three times a day. Weaning should take place when it is about one year old. After that time the milk becomes vitiated in quality.

It is an error to suppose that the constitution suffers from suckling. Very many women have improved in their health by performing this most feminine of all offices. Many very delicate

females have experienced the best effects from nursing their children; and many of the complaints incident to women are removed or alleviated by it. The spirits during this time are generally more lively and uniform, the temper milder and more even, and the general feelings more healthful and pleasant than before.

If a mother's own feelings for her infant alone will not lead her to nurse it, there is yet another reason to urge that she should do so. It is, that if not suckling, it is most probable that pregnancy will again speedily ensue, and instead of there being an interval of two or three years between child-bearing, she will be confined every year. Few constitutions can bear up long against this; the health soon becomes shattered, and premature old age supervenes.

Fretfulness, agitation, and all violent emotions should be avoided. A fit of violent passion in the mother has produced convulsions in the infant, and even death.

Nursing Sore Mouth.—Many mothers, while nursing their children, are afflicted with extreme soreness of the month. In some cases the suffering is acute and without intermission; the patient can take no food but liquids without torture; she shrinks from the pain even of articulation, becomes disheartened, loses all elasticity of spirits and all fortitude, her strength fails and her flesh wastes away. Said one who had experienced it, "It is the most *wearing* suffering which I ever endured."

This affliction is *peculiar* to nursing mothers. They must endure it, wean their babes, or resort to medical treatment which will be directed chiefly to the improvement of the general health.

Wet-Nursing.—It sometimes unfortunately happens that, from ill-health or other causes, a mother cannot suckle her own infant, which is always to be regretted, for no milk will agree with its constitution so well as that of the mother. It is then necessary to select a proper person to take upon herself the maternal office. When it can be done, before engaging a wet-nurse she should be sent to the medical man for approval. But sometimes this is not convenient, and it is therefore necessary to describe who is and who is not a proper person; for one not fit for the office will do the child more harm than good, and it had better be brought up on artificial food.

The wet-nurse should have an adequate supply of milk; which should be thin, and of a bluish-white color, of a sweetish and faint taste; and should, on standing, be covered with a considerable quantity of cream. Her confinement should have taken place about the same time, if possible, as that of the mother who requires her

services, so that her milk corresponds with the age of the child it is designed she should nourish.

A woman above thirty-five years of age should not be chosen; nor one of a petulant disposition; nor one with small breasts, or excoriated nipples, or who *is unwell* while suckling; who has any hereditary disease; who has nursed several months, as the milk may soon leave her, or become of bad quality; nor one of bad moral conduct, for one who drinks or who is otherwise dissipated will do the child harm.

If the nurse's child is alive, it should be examined to see how it has thriven, and if it is perfectly healthy.

Management of the New-Born Infant.

The infant, warmly wrapped up in a flannel receiver by the medical man, and given to the nurse, if it be cold weather, is to be dressed by a good fire. This is necessary, both because the temperature of the child's body at birth is several degrees below that of the adult, and because its power of retaining its warmth is also less.

The first thing to be done is to wash the child; and as its body will be found covered with a white, greasy, curd-like substance, this must be removed with great care, particularly from the eyelids, groins, armpits, and from the folds in the skin. This is most easily accomplished with warm water, fine soap, and a soft sponge, the child having been previously well oiled. If any of this secretion is not removed, it dries, hardens, irritates the delicate skin of the infant, and sometimes even produces severe excoriations.

The surface of the child's body having been thoroughly dried with a soft towel, the next thing is to put up the remains of the navel-string. Having been examined by the medical man previous to his leaving the chamber, it is presumed that it is properly secured, and it is now to be protected from injury until it separates from the body of the child—an occurrence which usually takes place somewhere between the fifth and fifteenth day after birth. The mode is as follows: A piece of soft old linen rag doubled, and about four or five inches in diameter, is to be prepared, and a circular hole cut in its centre, through which the cord is to be drawn. The cord being carefully folded up in this envelope, is to be laid on the abdomen of the child, and secured by what is called the belly-band, viz.: a band of thin flannel five or six inches broad, and long enough to go twice round the body. This ought to be

fastened with strings, pins in any part of an infant's dress being objectionable.

The child is now to be dressed ; and about this it is unnecessary to say more than that the clothing should be sufficiently warm, and not calculated to place the slightest restriction upon the movements of the limbs. In reference to the head-dress, a thin muslin cap in summer, and a thick one in winter, is all that is required ; and more than this, or anything that shall compress or restrain the free motion of the child's head, is highly injurious.

At birth, or two or three days subsequently, the breast of the infant will frequently be found swollen, hard, and painful, containing a fluid much resembling milk. Nurses generally endeavor to squeeze this out, and thus do great mischief ; for by this means inflammation is excited in the part, and sometimes abscess is the result.

If the breasts are simply slightly enlarged, it is unnecessary to do anything more than rub them occasionally and very gently with warm almond-oil, and a little time will restore them to their proper size.

The face and eyelids, and many other parts, may be much discolored when the labor has been very difficult ; but these appearances generally go off in a few days, when no violence has been used in the delivery.

Retention of Urine.—Occasionally an infant does not pass any urine for many hours after its birth. This most frequently arises from the fact of none being secreted. Sometimes, however, there is another cause, which the use of the warm bath will be found to remove, which should always, therefore, be employed four-and-twenty hours after the birth of the infant, if it has not by that time passed any water.

Food.—The new-born infant will not require any food, if put to the breast soon after its birth.

If it is necessary to give the infant anything, a little sweetened barley-water, milk and water, or very thin and well-strained gruel, are the best substitutes for the breast ; these must, however, be given slowly, and but a few teaspoonfuls at a time ; for an infant a few hours old would be a long time in sucking a teaspoonful ; and the person who may have it in charge must bear in mind that its stomach will not contain more than two or three tablespoonfuls.

The stomach and bowels of a new-born infant are filled with a blackish-colored matter called the *meconium*. This is generally passed soon after birth by the mere effort of nature. The custom

of giving a purge is unnecessary and injurious; the first part of the mother's milk is laxative, and answers the purpose better than any medicine.

On the General Management of Infants.

By the word "infancy" is to be understood the period of time from birth to the completion of the process of teething; when all the teeth have appeared, *childhood* commences.

The temperature of the nursery should be much the same as is agreeable to a healthy adult, during the whole of the first month; afterward it should be kept about 70°. Sudden changes of temperature should be avoided. The room should be well ventilated, for the infant and mother both require pure air; but a current of air should not be allowed to pass over either of them.

Food.—The experience of ages is in favor of an infant's being nourished entirely on the breast milk for at least six months. After that time it may be necessary to feed it once or twice a day with thin sago or arrowroot.

Clothing.—The clothing of infants should be warm and light. The long clothes may be worn for about six months; after that time they may be shortened one quarter, and progressively to the length which will enable the infant to walk. Warmth is most essential to an infant's health and comfort; and this is best insured by using fine flannel next the skin.

Washing and Dressing, as before recommended, should be performed with great tenderness and care; for if done violently and hastily the child will scream and cry, and when this happens it is generally owing to the awkwardness of the nurse. The *whole* body of the infant should be washed night and morning; and those parts of the body liable to be soiled, after each evacuation. The parts most likely to become excoriated are the folds of the skin about the armpits, neck, and groins; and these, after each washing, should be well dusted with starch finely powdered, or with lycopodium powder.

Cleanliness.—The most scrupulous regard must be paid to this, not only for the comfort of the babe, but also from fear of cold, etc. The moment a napkin is soiled or wet, it should be, even in the night, instantly removed, and replaced by a dry and warm one; the parts, if soiled, being first carefully washed with a sponge and warm water, and the groins freely powdered.

Exercise.—For the first month the infant requires but little; the fatigue it undergoes from being washed and dressed twice a

day, and the requisite *changing*, is enough, together with being gently carried a few times across the room five or six times a day; but after the first month, on every fair day, it may be carried out for an hour about noon with advantage. The person carrying it should hold it in a horizontal position, and walk slowly and gently, avoiding all running, jumping, or twisting round. As the infant advances in age and strength, the time of its being out should be prolonged gradually, until it almost lives the whole day in the open air; it should be carried horizontally, until it shows a disposition to *sit up*, and even then its head and back should be carefully supported. Until the infant is some months old it should not be *tossed up*, for it might be injured thereby. Gentle exercise in the arms, *often changing the position*, and nursing *on both arms*, is the best until it commences to walk, though it is well to let the infant roll on the carpet or on a rug on the floor.

Sleep.—For the first month an infant naturally, when in health, sleeps nearly two thirds of its time—afterward rather less; but during the whole period of infancy it should be allowed to sleep twelve hours or more out of the twenty-four. While speaking of this subject, it is well to observe that an infant in health should not be taken out of bed in the night, save to be *changed* when required. It should not be carried across the floor to lull it to sleep, nor spoken to or be allowed to look upon the light of a candle to please it; by so doing it will acquire a bad habit of waking in the night, injurious to itself and troublesome to its attendant. It is not necessary to feed a child more than once during the night, even when still being nourished at the breast. A mother who manages well will soon bring her little one into the habit of taking the breast immediately before going to sleep, and only once again before morning.

The night-clothes of the infant should be loose, long, and warm. Nothing can be worse than the custom of confining the limbs during the night.

When the child sleeps in the day, it may be laid in the bed or crib; but at night, at least for some months, it should sleep with its mother. Nothing can be more cruel than to banish a sickly or delicate infant to a cot or crib during the night, there to wail and cry for lack of that heat which it cannot itself engender, and which its mother's bosom would impart: the reason often given for the use of the crib is that the parent fears to *overlay* the infant. But the young mother soon becomes so accustomed to the presence of the child that its slightest movement is perceived, even while she sleeps, and she will even alter its position without herself waking.

After the infant is five or six months old, especially in warm weather, it will generate enough heat, and may then sleep in a cot by the bedside.

It is too much the custom to give some nostrum or other to infants to procure sleep. They all contain opium in some form, and are very injurious to the infant, and often fatal. No *soothing* medicine whatever should be given to an infant, unless prescribed for the particular case by a medical man. Avoid all "soothing synmps." They save the nurse much trouble, but they cost the infant's health, and perhaps its life.

Of Artificial Nursing.

If it unfortunately happens that a mother cannot suckle, and is unable to procure a proper person to whom to dedicate the maternal office, it becomes requisite to consider what is the best food for an infant thus situated. It should of course be, especially in the earlier months, as nearly like the milk of the mother as possible. The milk of different animals varies much in the *quantities* of their component parts, though they all consist of cream, curd, sugar, and whey; thus there is more cream in the milk of the human female than that of the cow, and also more sugar and whey. Next to the milk of the mother, or that of a wet-nurse, there is nothing better than fresh cows' milk, diluted with one quarter or one third part water, according to age, and with a little sugar added. A feeding-bottle with the rubber nipple attached directly to it, without a rubber tube, affords the best means of feeding infants, and is much better than the use of a spoon.

Whatever food is given to an infant for the first six months should be very thin, and not much sweetened. After the teeth are all cut, solid food may be given, as rice pudding, etc.; very little animal food should be given during childhood. Those children thrive best who have but little.

After the first teeth are cut, the child may have a light-boiled egg or a little calf's-foot jelly, and may also drink new milk and water.

Weaning.

This, with all infants, is a most important epoch in their existence, and frequently gives rise to disease if not conducted with great caution. It is difficult to fix a period when weaning should be attempted; but it should not be done too suddenly. The child should be prepared for the change by having, about the sixth or

eighth month, a little artificial food given it—at first once or twice a day, and afterwards oftener; so that it becomes *weaned from the breast in the day*, and has recourse to it only in the night. Let the process be accompanied with gentle carriage in the open air, if the weather is mild.

Though, as before remarked, it is difficult to fix a precise time for weaning, most authors agree that after the tenth month of lactation the milk becomes deteriorated, and unfit for the infant; besides, after that time the mother's health, as well as that of the baby, will suffer by continuing the practice. It may therefore be stated as a general rule, that the infant should be weaned by or soon after its second birthday, provided it be in good health; if not, the breast must be continued until the child is better. When an infant is cutting one or more teeth, it is not a favorable time to wean it, nor is it well to choose the hot months of summer.

On the Diseases of Infancy and Childhood.

By infancy is to be understood the period of time extending from birth to the cutting of the last tooth of the first set of teeth, or about two years and a half.

Inperforations of various natural passages may exist at birth, as inperforated *anus* (the lower bowel), nostril, eyelid, urethra, sexual organs of the female, etc.; or they may be malformed, or the exit of the natural evacuations may take place from unnatural openings. These all call for the immediate aid of the surgeon.

Nevi Materni (*Mother's-Marks*) may occur on any part of the body. When merely discolorations of the skin, and not elevated, they are not dangerous, but seldom admit of cure. But when they are elevated, and of a purple color, and grow rapidly, an operation becomes needful for their removal; as they may burst, and cause so great a loss of blood as to prove fatal.

Distortions of various Parts of the Body, as Club-foot, etc., are not uncommon. They are to be treated by careful bandaging, etc., under the direction of a surgeon.

Tongue-tie may be known by the child not being able to suck. It is occasioned by the *frænum* or bridle of the tongue being attached too near the lips, and requires a simple operation for its removal.

Harelip is well known. If the child cannot suck in consequence of the cleft, an operation must soon be performed, though always attended with danger to very young infants. If it can take the breast freely, the operation had better be deferred for a year or more.

Malformation of the Heart, if considerable, often shows itself as soon as the child begins to walk. The skin of the child is dark, and looks dirty and leaden; the nails and lips are blue and livid; the breathing is difficult; there is a kind of asthmatic, suffocating cough, and sometimes convulsions. When cough and convulsions arise there is danger; but persons so affected have lived to adult age, and then died suddenly. There is no remedy in medicine for this disease; but all excitement of body and mind should be avoided, the child should have rest, its bowels are to be kept open, and care taken that the stomach is never overloaded with food.

Dysury (difficulty of passing water) is to be relieved by warm fomentations, and a drop or two of sweet spirits of nitre.

Incontinence of Urine (inability to retain the water), especially in bed, is sometimes incurable until towards puberty. The best remedies are those that strengthen the habit of body, as country air, exercise, and sea-bathing.

Earache is a frequent and painful disease, both of infants and children. If too young to tell what ails it, it may be suspected by its being seized with a sudden and severe fit of crying, as if it had colic, and like it the pain seems to be easier at times, but it does not, as in colic, *spur* with its feet, nor is its belly hard; but the head is restless, and it complains if the ear is touched. In time the child sobs itself to sleep, and in the morning perhaps its cap is found stained by matter. Heat is the best remedy; a warm poultice or warm oil should be applied to the ear, and the back of the ear should be rubbed with warm laudanum. If there is a fetid discharge, the ear should be syringed carefully and gently every day with warm milk and water, and the bowels well opened. Some children, whenever they take cold, have a discharge from the ear, and are deaf. In this case the ear should be kept warm and frequently syringed, and the back of it rubbed with a little harts-horn and oil.

Ophthalmia, or Inflammation of the Eyes.—This disease may arise from exposure to a fire soon after birth; it then generally disappears in two or three days by washing with milk and water. But it may be what is called purulent ophthalmia, which is a very severe disease, and may cause loss of sight. It begins with a redness of the eyelids, which soon swell so that they cannot be opened, and discharge a large quantity of yellow, greenish matter, which excoriates the cheek. If allowed to continue, the globe of the eye becomes involved and may be destroyed. It requires very skilful medical treatment.

Eruptions, almost endless, attend teething, but are of little consequence if unattended by fever.

Infants who have artificial nourishment or bad milk are subject to troublesome successive crops of inflamed pimples, which slowly gather and burst, and form brown scabs which fall off. They may be on any part of the body, and sometimes are large enough to be called boils. The cause should be ascertained and removed.

Excoriations behind the Ears take place during dentition. If slight, they only require to be kept well washed with milk and water, and covered with lint spread with simple ointment. If the discharge of matter is great, they should be washed with two grains of sulphate of zinc dissolved in an ounce of water. Sometimes the ulcerations are so severe and extensive that the irritation causes convulsions; even mortification may ensue. If, therefore, they prove obstinate, a physician should be called in.

Teething.—Generally, the first teeth cut the gum from about the sixth to the eighth month; but some very delicate or rickety children have no teeth until much later. The two middle front teeth appear first, and in about a month the two opposite ones; then two side teeth in front, both above and below; about the twelfth or fourteenth month the first double tooth appears; about the sixteenth or twentieth month the eye-teeth appear, and from that period to the thirtieth month the back double teeth come through. The child is about two years and a half old when it has all its first set of teeth, twenty in number. These continue to the sixth or seventh year, when they begin to fade and fall out, to make room for the permanent set.

Diarrhea, or Purging, is often very severe, and at some seasons of the year fatal. In this disease the stools are of various appearances; as green, curdled, etc. Sometimes it is attended with inflammation and fever. It is common during the time of dentition.

When it does not proceed from dentition it generally arises from improper food, and the diet should be attended to. If the infant is at the breast, it should, if possible, have a change of breast, especially if the nurse has been out of order; and the diet of the mother or nurse should be attended to. The strength is to be supported by beef-tea, cream, and sometimes brandy, etc.

Worms.—These are of various kinds, and give rise to numberless morbid feelings and symptoms. There is pain in the belly, purging, variable and voracious appetite; the child is always hungry, has a bad breath; its complexion becomes pale, its lips swelled, a livid circle surrounds its eyes, the belly swells, and its sleep is dis-

turbed ; the child wakes terrified, has a dry cough, picks its nose, has a slow fever, occasionally headache, sometimes convulsions, and frequently grinds its teeth. Worm medicines are numerous, but should be given only by advice of a physician. Much benefit is derived from a proper attention to the general health.

Whooping Cough.—This troublesome disease is familiar to nearly all mothers and nurses. It is characterized by paroxysms of a peculiar cough, most severe at night. Being a contagious disease, few children escape it, and it generally occurs but once. When uncomplicated with other complaints it is seldom a dangerous disease, and exhausts itself in six or eight weeks. A great variety of remedies are recommended for whooping cough, and in the hands of an experienced physician there are some remedies that doubtless exercise a very beneficial influence. Advice should be sought in all cases of this malady, as it is very important to guard against dangerous complications. In the mean time the child should be kept warm and the skin moist.

Catarrh (Common Cold).—Infants are subject to catarrh, either common or epidemic. There is fever and inquietude, redness of the cheeks, watery discharge from the eyes and nostrils, disposition to sleep, panting and shortness of breathing, with frequent cough, but not severe. It generally goes off in a week by gentle purging, saline medicines, and the use of the warm bath.

Bronchitis—Inflammation of the Air-Tubes of the Lungs—is far from being uncommon ; it begins with cough, and a good deal of phlegm is secreted, which the child swallows. The cough is frequent and comes on in fits ; it is a *stifled* cough, and somewhat hoarse or shrill. The breathing is difficult, and on putting the ear to the chest a rattling is at times heard. Vomiting often takes place, the pit of the stomach is full, the stools are bad, the face pale, and the child sick and dull. It will take the breast, but no other food ; the breathing becomes more and more difficult, the child appears choked with phlegm, the feet and hands swell, the body is emaciated, the cheeks in the evening are flushed, the cough is severe, and death ends the painful scene. Advice should be sought and followed as early as possible.

Croup.—The form of croup most common, and often the most alarming to mothers, is marked by severe paroxysms of noisy and difficult breathing, and a peculiar cough. It generally begins by a cold or sore throat, and the attacks take place towards night. The child will appear well again the next day, and be up and running about as usual. There is rarely much danger in this variety of croup ; and all that can be done is to relieve the paroxysm by warm

baths, hot-water applications to the throat externally, the inhalation of vapor from hot water, and the administration of emetics.

The other variety of croup is a very different and a very fatal disease. It begins by cough or catarrh, and grows gradually worse, the patient becoming rapidly prostrated. The inspiration is difficult and noisy, and the voice is often entirely extinguished. A peculiar membrane is formed in the throat, and that alone may cause death by suffocation. There is no remission in the symptoms, and the voice once lost does not return during the disease, which lasts from four to ten days. The child may die early from shock, or from the false membrane, which sometimes extends downwards and gives rise to bronchitis.

No time should be lost in obtaining the best possible advice, for under the ablest treatment nearly three fourths of these cases prove fatal. It is *not* advisable to give emetics, because of their depressing influence; but great benefit is often derived from the inhalation of vapor from hot water, by means of which the air breathed by the patient should be kept constantly moist. When there is imminent danger of suffocation, the operation of opening the windpipe will sometimes save the patient's life.

The dress of children should be in some measure regulated by the season of the year; but it should always be easy and warm.*

Children should be allowed to run about much, and be in the open air the greater part of the day. They can hardly take too much exercise.

Parents should not be over-anxious to begin the work of education. Many children are ruined in health, bodily and mentally, by the hot-bed system of education now in vogue. It is better that little creatures of four, five, or six years of age should be *dunces*, than that they should have their bodily vigor lost, and

* INFANT MORTALITY.—*From Report of the Metropolitan Board of Health of New York.*—"The records of infant mortality demand something more than a merely statistical analysis; but we have to confront the fact as it is daily registered on the death-roll, that in these cities more than 32 in every 100 deaths are those of nurslings that have not reached their first birthday, and that 52 out of every 100 deaths are of children that have not reached their fifth birthday. Certain it is that nearly ten per cent of all children born in our cities are constitutionally and organically too frail and imperfect to survive the ordinary physical adversities through which they must pass during the first five years of existence. But there is another class of inevitable causes of child mortality which the vital statist and hygienist must carefully study. It is that class which kills by cholera infantum and bowel congestions in the summer, and by lung diseases and convulsions in the cold season. Individually considered, most of these deaths seem to the medical attendant to be inevitable; but if we consider them with regard to their chief causes, they plainly appear to be due to preventable circumstances."

their mental energy in after-life endangered, by work in the school-room, when they should be running in the green fields and pleasant woods.

The diet of childhood should be simple, and consist for the most part of good bread, potatoes, meat, and milk. Much fruit or many cakes and sweetmeats are injurious, as also are all wines, ale, porter, etc., in however small a quantity. Attention should be paid to the bowels of children: they should generally have two evacuations a day.

The true way, then, to make healthy children is to keep them clean and warm; give them plenty of air and exercise; few sweetmeats; sufficient, but not too much, plain food; and pay attention to the bowels. If these hints are acted upon, the visits of the medical attendant will be much curtailed in number, and the health of the children greatly improved.

Prolapsus Uteri, or Falling of the Womb. (See page 1039.)

Pruritus, or Itching of the Vulva. (See page 1043.)

Puerperal or Childbed Fever. (See page 825.)

Puerperal Mania. (See page 827.)

Spasm of the Vagina, or Vaginismus. (See page 1071.)

SPECULUM.

The speculum of Dr. J. Marion Sims, and its modifications (see Specula), is to uterine practice what the ophthalmoscope is in diseases of the eye; it has brought about a revolution in this field of medicine, and is to-day one of the simplest and most valuable surgical instruments in use. The patient is placed on the left side, and, without causing pain or exposure, the experienced practitioner in uterine diseases is enabled to see the uterus, gauge its size, judge accurately of its position, observe the condition of the surrounding organs, and make any necessary applications with as much ease and nicety as if any external part were the subject of treatment. Many other instruments are used in connection with the speculum, but most of them depend almost entirely upon it for their utility. Like all other useful instruments, the speculum is of course liable to abuse, but in the hands of the judicious and experienced practitioner its benefits can hardly be over-estimated. (See also page 906.)

STERILITY, OR BARRENNESS.

By sterility is meant incapacity for conception; it means the same as infecundity or barrenness.

Causes.—Among the causes of sterility are these: absence of the womb, vaginismus, displacements of the womb, polypus or fibro tumors, shutting up of the canal of the womb, chronic inflammation of the ovaries, cellulitis or peritonitis, absence of ovaries, dismenorrhea, menorrhagia. Vaginismus causes sterility by making it impossible for the semen to enter the vagina; displacements of the womb and flexion of the womb cause sterility by making it impossible for the seminal fluid to enter the womb. Impotence on the part of the husband can also cause sterility.

Treatment.—Very many cases of sterility can be entirely cured by appropriate treatment. Each case must be treated by itself according to the cause. There is no special rule that will apply to all cases; many cases require surgical operations. Causes that depend on impotence in the male must be treated for impotence; false delicacy should not interfere with the proper treatment of these cases. Many suffer from sterility or want of children who by proper examination and proper treatment would be entirely restored.

Suppression of the Menses, or Amenorrhea. (See page 757.)

VAGINA, INFLAMMATION OF THE—(*Vaginitis*.)

The vagina is subject to various forms of inflammation.

Causes.—These may be caused by exposure to cold, and at times by injury from coition, from pessaries or parturition. It sometimes occurs shortly after marriage.

Symptoms.—The symptoms are a feeling of heat and burning of the vagina; frequent desire for making water; severe pain in that region coming and going; a sense of weight at the perineum, with profuse discharge of an offensive character.

Treatment.—The treatment consists of resting in bed, abstinence from sexual intercourse, injections of warm water in the vagina with an infusion of poppies to make it pleasant and soothing. After the acuteness and severity of the attack has passed by, a solution of sulphate of zinc, a drachm to a gallon of water, may be employed.

VAGINISMUS, OR SPASM OF THE VAGINA.

The attention of the profession has been called to this disease but recently. It is a spasm of the vagina resulting from an irritable condition of the part that makes sexual intercourse, and consequently conception, difficult or impossible.

This disease causes much domestic unhappiness, and sometimes undoubtedly leads to divorces. Those who suspect that they are afflicted with this nervous condition should at once consult their physician. By so doing they will save themselves much unhappiness. The disease is now regarded as perfectly curable. Various methods of treatment are employed for the dilatation of the vagina, and all of them are successful.

Patients who are afflicted with this peculiar malady are usually of a highly nervous organization, and in addition to the local treatment by the physician should also use every means to improve their general condition.

Barrenness or *sterility* is caused by this irritable condition of the vagina more frequently than is commonly supposed. I do not mean by this that it is the only or the principal cause of barrenness. Barrenness is a *result* of a great many diverse causes. It is oftentimes the result of causes which it is impossible to ascertain. Very frequently, however, it arises from some difficulty such as *vaginismus*, as I have above described it, which, under proper treatment, can be entirely removed. Sometimes it is the fault of the husband, and sometimes of the wife. It should not necessarily be made a ground of reproach against either party. It is frequently a misfortune that is to be borne, like all other earthly afflictions, with calm resignation.

The false delicacy which prevents many from consulting their medical adviser for diseases of the sexual organs is not only absurd, but in many cases is in the highest degree sinful.

VAGINAL INJECTIONS.

One of the chief domestic remedies for different forms of diseases of the womb is injection of the vagina with warm water, at a temperature that is comfortable to the patient. Davidson's syringe is a very convenient one for this operation. The water, one or two quarts, may be placed in a tub, the patient sitting over it, or on a stool in the tub, and inject the water by means of a syringe; the injections may be kept up fifteen or twenty minutes, as may be agreeable. An injection also may be made when the patient is lying down on a lounge or bed: a common tub or bucket with a stop-cock is placed at a little elevation, and a rubber tube, five or six feet long, connects this with a metallic stem. This is a more convenient method of using injections to those who are very feeble.

VERSIONS AND FLEXIONS OF THE WOMB.

The womb is liable to be pushed forward or backward, or flexed forward or backward.

Causes.—The causes for this condition are injury of the womb, fibroid tumors, severe physical exertion, tumors of the abdomen, tight clothing, ruptured perineum, and general relaxation of the tissues from neurasthenia.

Treatment.—By rest in bed, by removing pressure of tight clothing from the abdomen, and by the use of pessaries. It is not



MISPLACEMENTS OF THE WOMB.

ANTEVERSION, Figs. 3, 6, and 7. RETROVERSION, Figs. 4 and 5. PARTIAL INVERSION, Fig. 8.

well to rely upon the pessaries, as their reckless use is attended with danger. Patients who use the pessary ought always to see a physician occasionally, and have it taken out to see whether the vagina has been injured by its presence. Version of the womb forward is in modern times treated very satisfactorily. With some cases surgical operations of various kinds are necessary.

Symptoms.—Flexion forward and flexion backward of the womb has sometimes various symptoms, such as leucorrhœa, painful menses, sterility, general nervous debility, neuralgia, pain on sexual intercourse, severe backache. These symptoms are to be

observed and found in a great many varieties of trouble of the womb, and sometimes are found when the womb is in a healthy condition. Only by a careful examination can a person state whether such symptoms would indicate flexion or version of the womb or not. These cases require careful examination, accurate diagnosis, and skilful treatment adapted to each case. Thousands of women go suffering for years with many or all of these symptoms, coming from some one or other of the diseases of the womb, without ever having had an examination made, and who, if they were properly treated, might have all their sufferings relieved. (See Figs. 1, 2, 3, 4, and 5.)

Weaning. (See page 1064.)

White Leg, Milk Leg, or Phlegmasia Dolens. (See page 815.)

WHITES, LEUCORRHEA, OR CATARRH OF THE VAGINA.

The mucous membrane of the *vagina* and womb, in the healthy condition of the parts, is always kept moist by its own secretion; but from various general or local causes, this mucous fluid, which is only intended to lubricate the parts, is often secreted in too great abundance, and runs from the vagina.

Symptoms.—The discharge, far from being always white, as the vulgar term applied to the disease would lead us to suppose, presents various shades of color. At first it is transparent, glutinous, resembles the white of eggs, and is not very copious; but in the more protracted cases becomes thin, watery, or appears slightly milky, opaque, and is freely discharged. This disorder is not accompanied with pain, except occasionally in the loins, when the patient is fatigued; but never continues long without producing more or less derangement of the general health. In many cases the menstrual discharge is too profuse, irregular, or altogether obstructed; and although the patient may be robust, and present the general appearance of good health for a considerable length of time, yet at last she becomes pale, and at times haggard. The eyes lose their natural brilliancy, and the lips their color. The feet and hands are often cold; the bowels are frequently constipated; she complains of general languor, and labors under the usual symptoms of indigestion; and not unfrequently the disorder is complicated with hysteria or chlorosis. (See Green Sickness.) In some patients the discharge is slight, and not constant, being only observed for some time after each menstrual period; in others, again, it is so

profuse that pieces of linen require to be constantly applied in order to prevent the fluid from running down the thighs; and, without the greatest attention to cleanliness, irritation or excoriation of the adjacent parts is induced. When it exists to this extent the parts are often much relaxed; and sometimes there is considerable prolapsus, or falling down of the womb; but there is neither pain, heat, nor swelling, and the discharge is without smell.

Causes.—The term Whites is generally understood to apply only to the disease as above described, which is wholly unconnected with inflammatory action, and arises from debilitating causes—such as poor, watery, and deficient diet, living in the confined and impure air of large towns, or in damp, obscure, and ill-ventilated situations, and light or imperfect clothing; hence the lower classes of females in the country, who wear worsted stockings and woollen under-garments, are very rarely affected with this disorder. It may also arise from trouble of mind, indigestion, obstructed or excessive menstruation, chlorosis, etc.

But females are also very subject to discharges from the genital organs of an inflammatory nature, resulting from various irritating or exciting causes—such as the use of rich stimulating food and drink; violent exercises, as dancing and riding on horseback; excessive sexual indulgence, improper habits, and irritation of the parts, in whatever manner produced; exposure to cold; difficult labor; an acrid state of the *lochia* or cleansings; worms, piles, etc. This form of the disease, when acute, cannot be distinguished from gonorrhea: the symptoms are the same. The patient complains of a feeling of tension of the parts, heat, pain, etc. (See Gonorrhea.) The discharge at first is milky, then of a dark yellowish appearance, and afterwards changes to a greenish color; or there may be from the first a discharge of a glairy secretion resembling the white of eggs; this last indicates that the neck of the womb is affected. If the disorder terminate favorably, the discharge begins to diminish from the tenth to the twentieth day, and gradually assumes the appearance described in the first form of the disease, and at length ceases entirely; or it may become chronic, and then a more or less thick discharge, of various colors, is voided, which may continue during an indefinite period. In some cases the secretion is devoid of smell; in others, again, it is more or less fetid. This variety of the disease may be characterized by symptoms of a much milder description; the degree of severity must, of course, depend upon the intensity of the cause, the constitution of the patient, and other circumstances.

Treatment.—The treatment of leucorrhœa must depend greatly on the cause of the disorder. The indiscriminate use of cold water or of strong astringent injections will do more harm than good. Much benefit will often result from the use, by means of a Davidson's rubber syringe, of water, as hot as it can be borne. The injection should be kept up for at least fifteen minutes, and used twice a day. The addition of a drachm of common salt to each pint of water used will often prove serviceable, and in more obstinate cases half the quantity of alum may be substituted for the salt. At least a gallon of hot water should be used at each injection, and the water alone ought to be thoroughly tried for several days before resorting to the salt or alum. This treatment is particularly applicable to cases in which the discharge is white and creamy. Where there is a greenish or a clear, glairy discharge, there is reason to suspect some disease of the womb demanding special treatment. In all cases of leucorrhœa the general condition of the patient must be attended to. Tonics, as the various preparations of iron and quinine, are very often of as much importance as local treatment. Constipation of the bowels must be obviated, but the habitual use of purgatives cannot be too strongly condemned. Much benefit will be derived from sponging the abdomen and loins every morning with cold salt-and-water, and afterwards rubbing them with a coarse towel until the skin is flushed and warm.

The use of the hot water, as already directed, should be continued for several weeks after the discharge has been checked, else the trouble may return; but it may be sufficient to take one thorough injection daily, instead of two as at first.

Dr. Tyler Smith, of London, advises the following injection :

Alum, $\frac{1}{2}$ ounce (16 grams),
Tannic acid, 2 drachms (8 grams),
Water, 2 pints (1024 grams).

Inject half at night and half in the morning.

The following is also recommended :

Oxide of zinc, $\frac{1}{2}$ ounce (16 grams),
Water, 2 pints (1024 grams).

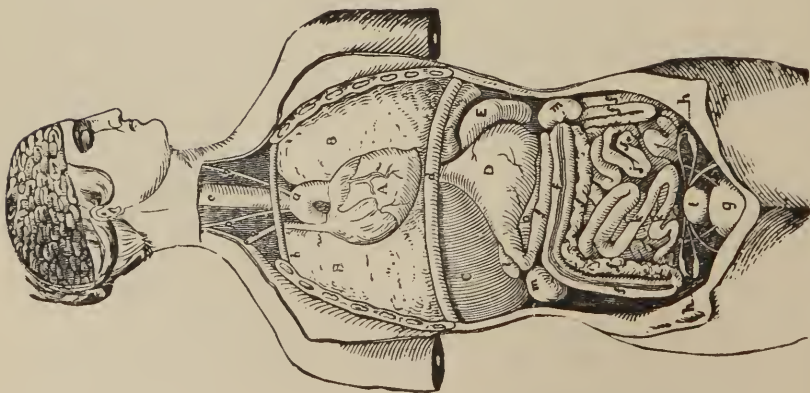
Or this :

Sugar of lead, 6 grains (39 grams),
Water, 1 ounce (32 grams).

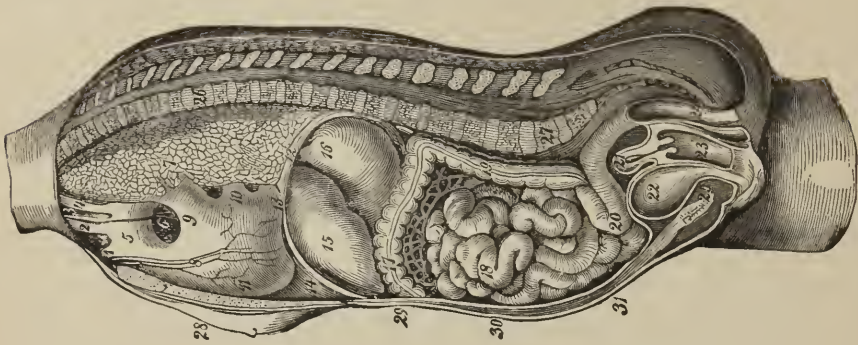
EXPLANATION.

- A, Heart. B, B, Lungs.
C, Liver. D, Stomach.
E, Spleen.
f, f, f, Large intestines.
g, Bladder.
h, h, Ovaries. *i*, Uteris.
j, k, Small intestines.
l, Gall bladder.
m, m, Kidneys.

- 1, 2, 3, 4, 5, 6, Thoracic Organs.
7, Lungs.
8, 9, 10, 11, Pericardium.
12, 13, 14, Diaphragm.
15, Liver. 16, Stomach.
17, Transverse colon.
18, Small intestines.
19, Descending colon.
20, Sigmoid Flexure.
21, Uteris. 22, Bladder.
23, Vagina. 24, Rectum.
25, Pelvis bone.
26, 27, Spinal column.
28, Pleural cavity.
29, 30, 31, Peritoneal cavity.



POSITION OF THE INTERNAL FEMALE ORGANS.



VERTICAL SECTION OF THE INTERNAL FEMALE ORGANS.

When a careful use of the simple means recommended, including tonics and good nourishing diet, fails to cure or relieve the leucorrhœa, it will be the duty of the sufferer to consult some physician and follow his advice.

Womb, Falling of, or Prolapsus Uteri. (See page 1039.)

WOMB, INFLAMMATION OF.

The womb is liable to chronic inflammation of the mucous membrane; this is the most frequent of all the diseases of the female genital organs.

Causes.—Its causes are falling of the womb, versions and flexions of the womb, displacements of the womb, tumors,—which in turn are caused by neurasthenia, bad style of dress, excessive coition, and the abuse of pessaries.

Symptoms.—Among the symptoms are burning feeling about the pelvic region, pains in the back and loins which are made worse by exercise, and the whites. The patient in time also becomes nervous, irascible, and feeble, and oftentimes sexual intercourse is accompanied with great pain. Only a careful examination can determine whether these symptoms indicate inflammation of the womb or not.

Treatment.—The treatment is both local and general. The general treatment is the same as that for neurasthenia (see Neurasthenia). Among the domestic remedies that may be recommended for local use are injections of warm water. Another injection: Dissolve a teaspoonful of chloride of lime in a pint of cold water; use two or three times a day. Mustard drafts or hot fomentations of bitter herbs should be applied to the abdomen over the region of the womb. The herbs should be boiled, and flannels dipped in the hot decoction and applied as hot as can be borne, and renewed frequently. The bowels are to be kept loose. If there is much fever, give occasionally a dose of Dover's powders. If the patient can sit up, the warm or tepid hip-bath, for half an hour at a time, will be found beneficial. There are, besides, many other applications which a surgeon can make by the use of a speculum which it would be useless to describe here, as of course it cannot be used by the patients themselves.

Womb, Inversion of. (See page 1043.)

Womb, Version and Flexion of. (See page 1073.)

WORMS.

The production and development of worms in the body is one of the most remarkable facts in connection with disease. They are found mostly frequently in the intestinal canal, but have been ob-

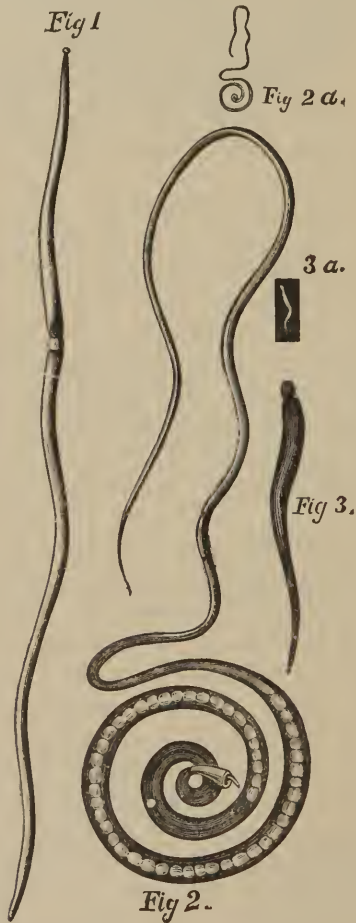


Fig. 1.—The Round-worm, natural size.

" 2.—The Long Thread-worm, magnified.

" 3.—The Short Thread-worm, magnified.

Fig. 2 a.—The Long Thread-worm, natural size.

" 3 a.—The Short Thread-worm, natural size.

served in the bladder, kidneys, liver, brain, and eyes; indeed there is scarcely an organ or structure of the body in which they are not occasionally seen. The body is infested with about thirty different kinds of worms. I shall speak here only of the round-

worm, thread-worm, tape-worm, and the *trichina spiralis* found in the muscles.

Symptoms.—The general symptoms which indicate the presence of worms in the bowels are the following: The face is pale, there is a bluish or livid-colored circle round the eyes, the countenance frequently changes color, the appetite is variable and capricious, sometimes voracious. There is itching of the nostrils and of the anus, disturbed sleep, and grinding of the teeth; the belly is swollen, though not hard; the stools are slimy and irregular, and griping pains are sometimes felt in the belly. It must be confessed that all of these symptoms are uncertain. The only reliable symptom is to see worms after the child has passed them.

The *round-worm* varies from six to ten inches in length, is usually found in the small intestines, and resembles the common earth-worm in its general appearance; it chiefly infests the bowels of children, sickly persons, and those who are badly fed. The particular symptoms which lead us to suspect the presence of this species of worms are swelling of the abdomen, and sharp or colicky pains felt occasionally in different parts of it, more especially about the navel; slimy evacuations from the bowels, and a disagreeable breath.

The *thread-worm* or *maw-worm* is from a quarter to half an inch in length, and is usually seated in the rectum or lower bowel. It is remarkable for the quickness of its movements. People of all ages are liable to be troubled with worms of this description; but they are more common in the bowels of children than in those of adults or persons advanced in life. The particular symptoms occasioned by thread-worms are itching about the fundament, which is often very distressing when the patient is warm in bed; occasional scalding or difficulty in voiding the urine, a bearing-down sensation at the lower bowel, an oozing of slimy matter from the fundament, irritability of temper, and sometimes great depression of spirits. This and also the round-worm occasionally crawl out of the anus during the night.

The *tape-worm* is composed of numerous pieces united by joints, and is generally an inmate of the small intestines, where it lives on the chyle, or milky juice which is intended to nourish the body. It is seldom less than several feet in length, and is frequently discharged in pieces four or five yards long. In some instances it has been known to measure upwards of fifty feet. The tape-worm is more common in adults, particularly females, than in children. It is often found alone. Hence the term *tania solium*. Itching about the nostrils and anus, pain in the belly, and colic more or

less severe, occurring occasionally, are signs which may lead us to suspect the existence of tape-worm; but there is no unequivocal symptom by which the presence of this worm in the bowels can be ascertained.

Treatment.—For the round-worms and thread-worms the following course of treatment will usually be effectual:

1. Give of the infusion of *senna* and *pink-root*—half an ounce (16 grams) of each to a pint (512 grams) of water—a table-spoonful before breakfast. The dose may be increased or diminished according to the age of the patient. This remedy is much used by the profession and by the people.

2. Give *santonine*. (For doses, see *Santonine*.) This medicine requires care in using it. It may produce unpleasant symptoms. One half or one quarter of a grain (.032 or .016 gram) is a sufficiently large dose for a child to begin with. This dose may, of course, be modified by the age. Three or four grains (.19 or .26 gram) of santonine may be mixed with cacao butter, and put into the rectum every night.

The following prescription may be used for round-worm:

Fluid extract of pink-root and senna, 1 ounce (32 grams),
Santonine, eight grains (.52 gram).

Dose.—One teaspoonful to a child of five years.

Or the following:

Oil of wormwood, 8 drops (.40 gram),
Fluid extract of pink-root and senna, 1 drachm (4 grams).

Take the whole at a dose.

Use the following as an injection for thread-worm:

Infusion of quassia, 1 pint (512 grams),
Common salt, 2 ounces (64 grams).

Inject all of this.

Or the following:

Carbolic acid, 15 drops (.75 gram),
Glycerine, 1 ounce (32 grams),
Chlorate of potash, 2 drachms (8 grams),
Water, 8 ounces (256 grams).

Inject all of the above.

3. Give oil of turpentine in doses from one to four teaspoonfuls

(5 to 20 grains). This is a very effectual remedy. This is also a good remedy for tape-worm.

4. Give pumpkin-seeds, made into a paste, in large quantities and on an empty stomach. Among other familiar remedies I may mention *cowhage*, *calomel*, *powder of tin*, etc.

Turpentine may be given to children with perfect safety in the dose of a dessert-spoonful along with half a cupful or more of milk, linseed-tea, gruel, or any other demulcent drink. The best time to take it is in the morning, about half an hour before breakfast; but if it produces much sickness of stomach or vomiting, the next dose should be given the following forenoon about two hours after breakfast. The dose must be repeated daily for three or four days or a week, a dose of castor-oil (a dessert-spoonful or more, according to the age) being given every second day with the turpentine, until all the worms are expelled. The internal use of oil of turpentine is attended with no risk whatever; even in large doses it either passes off by the bowels or is vomited up without doing any harm.

In the West Indies the remedy generally employed is *cow-itch*, which seldom fails in effectually clearing the bowels of this species of worms.

Treatment of Tape-worm.—When *tape-worm* occurs in adults, which is generally the case, *the turpentine* must be given in sufficiently large doses to act as a purgative; or it should be given with castor-oil, in order to ensure its speedy expulsion from the bowels. The usual dose is a table-spoonful (20 grains), in conjunction with the same quantity of castor-oil or twice the quantity of olive-oil, which may be taken floating on milk, or on cinnamon or peppermint water. It may be necessary to increase the dose to two or three table-spoonfuls, and in all cases the remedy should be given every second day until the worm be expelled.

Pumpkin-seeds, *petroleum* in doses of twenty to thirty drops, *oil of male fern* in doses of a drachm or two (4 or 8 grams), and kousso, in half-ounce (16 grams) doses—all are good remedies against tape-worm. Inject large quantities of warm water in the rectum after the purgative or anti-worm medicine is taken. The water carries the worm along so that it cannot find lodgment. The following combination is also endorsed:

Powdered kousso, 6 drachms (24 grams),
Castor-oil (hot), 1½ ounce (48 grams).

Strain this and then pour on the residuum, 1½ ounce (48 grams) of boiling water. Filter, and then add the yolk of an egg in an

emulsion and 40 drops of *sulphuric ether*; add sugar. Take the whole at a dose.

Or the following: Half a drachm (2 grams) of the *oil of male fern* in two ounces (64 grams) of thin mucilage. Take this, and in ten minutes take a glass of sweet milk. Two hours afterward take an ounce of castor-oil mixed with one drachm (4 grams) of spirit of turpentine and mucilage.

Worms, by the irritation which they produce, and the disorder which they occasion by drawing their sustenance from the juices intended to nourish the body, exercise over all the vital functions, and even over the intellectual faculties in some instances, a more or less injurious influence, which is felt throughout the whole animal economy, and may give rise to diseases of a formidable and even dangerous character, such as epilepsy, St. Vitus's dance, catalepsy, hysteria, somnambulism, and other obscure nervous affections. Hence, in all these disorders, when no other cause can be traced, we have reason to suspect the existence of worms in the bowels, even though none of the ordinary symptoms by which they are manifested be present. In many cases the remedies usually administered with the intention of destroying worms have been the means of curing diseases which have obstinately resisted all other methods of treatment.

Preventive Treatment.—Plainly dressed animal food, well seasoned with common salt; good bread, with a sufficiently liberal allowance of wine or porter; plenty of exercise, and the occasional use of purgative medicine, constitute the best means of correcting that state of the system which appears to be favorable to the development of worms. *Tape-worm comes from infested pork, beef, and mutton; therefore let the meat be thoroughly cooked.*

Salt is absolutely necessary as a condiment to our food, and appears to be essential to the prevention of worms. According to a law which once existed in Holland, criminals were condemned to live on bread made without salt; the effect of which was that worms were generated to such an extent that a lingering and terrible death is said to have been the consequence. Salt is not only an excellent preventive, but is one of the safest and best remedies that can be employed against worms. In the dose of from half an ounce to an ounce (16 to 32 grams), taken every morning before breakfast, in warm barley-water or thin gruel, it has had the effect of expelling tape-worm after turpentine and other powerful remedies have been tried in vain. The same quantity dissolved in water, and used as an enema, is a popular and frequently a successful method of destroying the ascarides, or thread-worms.

WORMS IN MUSCLES (*trichina spiralis*), OR TRICHINOSIS.

In 1860 a disease was discovered in Germany which is now known as *trichinosis*, or the existence of worms in the human muscles. This is one of the diseases for the discovery of which we are indebted to the microscope. (See Microscope.) The existence of this parasite has been known since 1832. Small ovoid sacs were found in the human muscles that contained a small round-worm coiled upon itself. It was at first supposed that these worms did no injury, and the discovery commanded but little attention.



TRICHINA SPIRALIS.

In 1860 a peculiar epidemic broke out in Dresden, Germany. The symptoms somewhat resembled those of typhoid fever and rheumatism. On examination of the muscles of one who died, it was found that they were filled with *trichinae*. Portions of these muscles were given to a rabbit, and the rabbit died, and his muscles were found to be infested with *trichinae*. Portions of the muscles of this rabbit were given to another rabbit. This second rabbit also became infested with *trichinae*, and died.

Such was the discovery of the disease known as trichinosis. It is manifest that these *trichinae* grow very rapidly. A single female can produce an enormous number of young. It should be remembered that lower orders of life breed rapidly. "One species of infusoria, visible only under a high magnifying power, is calculated to generate *one hundred and seventy billions in four days.*"

Concerning the symptoms caused by the presence of *trichinae*, Prof. Dalton remarks as follows:

"Now to what symptoms does this accident give rise? As I have already said, within the first ten days there is irritation of the intestines. In some instances this irritation is very great; and the greater it is, the more favorable the prognosis, as a general rule. After eating trichinous flesh the patient generally begins to suffer within the first week, sometimes within two days. Now, if the irritation of the intestine be extreme, so that frequent and abundant evacuations are produced, the chances are very great that all, or nearly all, of the parasites will be discharged from the intestine. If so, the patient is safe. But if the irritation be not very marked, time is allowed for the young *trichinae* to penetrate the intestinal walls, and enter the muscular tissue—from the end of the first to

the end of the second week. This is the most dangerous period, the second stage of the disease. There is general pain and soreness, and œdematous swelling throughout the muscular system. At the same time typhoid symptoms manifest themselves; the patient is debilitated, his pulse rapid, skin hot, tongue and lips dry, and his general appearance closely resembles that of a patient with typhoid fever.

"The passage of the worms into the muscular tissue, and the changes taking place there, are very apt to produce symptoms which result in the patient's death at or before the end of the fourth week. By that time the worms have become completely encysted, and after this the symptoms of irritation begin to disappear. The muscular system becomes habituated, as it were, to the presence of the parasite, and after a while the symptoms all subside; the patient can move his limbs as before, and then considers himself as entirely recovered.

"The disease may be said to have two stages:

"First, the presence and procreation of the worms in the intestines. The symptoms of this stage are *diarrhea, vomiting, and general debility*.

"Secondly, removal of the worms from the intestines to the muscles. The symptoms of this stage are severe pains and stiffness in the muscles, great debility, complete prostration, and a typhoid condition. The disease may terminate fatally in five or six days, or may last six weeks."

The great cause of trichinosis in man is eating pork that is either raw or not thoroughly cooked. The Committee of the Academy of Sciences in Chicago examined large numbers of hogs, and found *trichinæ* in one out of fifty. "Some of their muscles contained from 10,000 to 18,000 in a cubic inch."

The disease cannot be *cured*. It can be *prevented*. The way to prevent the disease is *never to eat pork that is not thoroughly, completely cooked*. Thorough cooking (not merely warming) destroys the life of the *trichinæ*. If we act upon this rule we need not fear the disease.

Among other parasites found in the human body I may mention the *Guinea worm*, which is found beneath the skin. It is not uncommon in tropical regions. It is about one twelfth of an inch in breadth, and in length varies between a few inches to *five or six feet*. They usually attack the lower limbs. They seem to get into the limbs of those who bathe or wash in ponds or streams. They are apt to produce ulceration at some point in the leg. Little weights are then attached to the worm, and it is slowly *worked out*. The process sometimes takes days and weeks.

A few years since I saw a terrible case of this in the State Hospital in New Haven.

WRIST-DROP. (See Lead Palsy.)

WRITER'S CRAMP—PEN PALSY.

This name is given to a *spasmodic action of the muscles* when one attempts to make a particular movement, such as writing, sewing, playing on a musical instrument, etc. Though called "writer's cramp," it is not confined to writers. It may attack the musician, the telegrapher, the barber, the milkmaid, the seamstress, the barber, and the artist, and may render it difficult or impossible for them to pursue their respective occupations.

During the past few years I have been specially investigating the disease known as *writer's cramp* and affections allied to it.

These investigations have been pursued in various ways—by the study of cases in my practice; by conversation and correspondence with physicians from all parts of the country and other countries; by consultation with physicians in regard to cases, and by circulars of inquiry that have been noticed in various journals and brought to the attention both of physicians and the sufferers from the disease. The inquiry has extended to England, Germany, and Australia.

Symptoms.—The main results can be stated in the following propositions:

1. *What is called the cramp is but one of a large number of the symptoms of this disease, and no two cases are precisely alike.*

There are at least fifteen or twenty other symptoms of this disease. The recognition of these symptoms, especially in the early and premonitory stage, is of the highest moment, for the reason that in the early stage the disease is curable.

The list of symptoms of writer's cramp is as follows: 1, *fatigue, exhaustion*; 2, *dull, aching pain*; 3, *nervous, irritable feeling*; 4, *general nervousness*; 5, *trembling, unsteadiness*; 6, *cramp, spasm, jumping, twitching, rigidity, contraction of muscles* (in some cases the pen is involuntarily hurled at a great distance, as across the room); 7, *stiffness and tightness*; 8, *powerlessness, helplessness*; 9, *numbness, areas of anesthesia, tingling*; 10, *neuralgia*; 11, *burning, stinging, dancing, prickly feeling*; 12, *soreness*; 13, *throbbing and swelling feeling*; 14, *thrilling, running, electric sensations*; 15, *tightly-bound feeling of wrist*; 16, *cold-*

ness; 16, *abnormal sensitiveness* to touch or cold, or mental influences; 17, disinclination to write; 18, *slowness* in writing; 19, *itching*; 20, *perspiration*; 21, temporary aphasia; 22, dryness of the joints; 23, swelling of the wrist and hand; 24, *actual paralysis*; 25, abnormal grasp of the fingers on the pen-holder or pencil—a very common symptom; tendency of the fingers, especially the middle one, to slip out of their places on the pen-holder, creating a desire by the sufferer to moisten them to prevent slipping; bearing down on the paper with unnatural or unusual pressure.

Many of the above symptoms are not confined to the hand, but extend to the forearm, arm, shoulder, neck, to the opposite arm, and over the whole body.

2. *Also in the other forms of professional cramp, as that of telegraphers, musicians* (violinists, organists, pianists, harpists), *sewing-women, painters, artists, dancers, hammer-palsy, and so forth, the cramp is but one of a number of symptoms, and by no means always the most important symptom: and, as in writer's cramp, there is frequently no cramp at all from the beginning to the end of the disease.*

There is no *one* symptom of the disease that can be said to be diagnostic. It is by taking a survey of *all* these symptoms, and by studying them in their relation to each other and to the history of the case, that we are able to make out the diagnosis of writer's cramp, or of any of these allied disorders.

In some cases the disease, or rather the tendency to the disease, is hereditary—two and three cases having been known in a single family.

3. *This disease occurs mostly in those who are of strong, frequently of very strong, constitutions, and is quite rare in the nervous and delicate; and when it does occur in those who are nervous, is easier relieved and cured than when it occurs in the strong.*

This fact is not peculiar to writer's cramp, but applies to other nervous diseases, as impotence, muscular atrophy, and ataxy. I see every day cases of nervous exhaustion (neurasthenia) in its various forms, and quite rarely do I see writer's cramp in them; and when they do have this disease, it is mild and curable. I have successfully treated a number of these cases.

4. *This disease is far less likely to occur in those who do original work, as authors, journalists, composers, than in those who do routine work, as clerks, book-keepers, copyists, agents, and so forth.*

The reason is clear. Original thinkers must take time for thinking as they write, and thus they rest the nerves and muscles

of the hand; while routinists, having little or no thinking to do, write on constantly and uninterruptedly, oftentimes at the extreme of their speed.

In some cases an attack of writer's cramp has followed a *single* task of long copying. In one of my cases—an authoress—there had never been any sign of the disease until she performed a task of routine work. Of my cases eight were physicians, eight were lawyers, five were clergymen, and the remainder were clerks, book-keepers, agents, copyists, and merchants.

Men who write bad, scrawly, illegible hands rarely have writer's cramp; it is the penalty for writing plainly and carefully. Like prevents like, and those who always write as though they had writer's cramp never have it.

5. *This disease, like all nervous diseases in this country, diminishes in frequency as we go south.*

In the Gulf States writer's cramp and maladies allied to it are very rare. The same is true of hay-fever, which is a type of nervous diseases, and indeed of the whole family of functional nervous maladies, such as sick-headache and neurasthenia, or nervous exhaustion in all its manifestations.

6. *Writer's cramp is no longer an incurable disease.*

In the early and forming stage, especially, it responds to treatment quickly, and in many cases permanently. During the stage of exhaustion, fatigue, and pain, with the other symptoms of numbness, neuralgia, irritability, trembling, powerlessness, soreness, coldness, stiffness, and so forth, this disease can be treated as satisfactorily as almost any other form of nervous disorder; and, even when cramp or spasms of the muscles have appeared, it may be entirely cured.

In the later stages, after the symptoms have existed for years, the malady may become absolutely hopeless, even though the patient abandon his occupation. I have seen cases that have been afflicted for over a quarter of a century.

Treatment.—The treatment of writer's cramp and affections allied to it consists:

1. In the use of electricity locally applied. Both galvanic and faradic currents may be used—preferably the former. In some cases galvanization of the spine and neck, and what are called spinal-cord nerve-currents, are indicated. Strong galvanic currents, with metallic electrodes, I have used with advantage in some cases where mild currents seemed to do no good. The wire brush with the faradic current I often use, and in some cases electro-puncture.

The relief of pain and fatigue that follows these electrical ap-

plications is immediate and uniform, and most grateful to the sufferer; and this temporary effect can be obtained even in the worst cases. I have not yet been able to demonstrate any very marked advantage from the rhythmical movements of the muscles in connection with the electrical applications.

2. Hypodermic injections of atropine, strychnia, duboisia, Fowler's solution, and other tonics, narcotics, and sedatives. These remedies need often to be gradually pushed to their physiological effects. Electricity and hypodermic injections combined have made an epoch in the treatment of writer's cramp. The evil effects of hypodermic injection are guarded against by care in preparing the solutions, by dilution of irritating substances, by moderately deep puncture, and by substituting other treatment in those cases where, from any constitutional tendency, suppuration is easily excited.

3. The internal use of calabar-bean, ergotine, iodoform, and in some cases of nerve-food, as oil and fats. It is useless, in the majority of severe cases, to dally with mild remedies or ordinary tonics.

4. *Massage*, or systematized kneading and manipulation of the muscles, with friction, and pinching, and pounding of the skin, and passive movements of the joints, large and small. The whole arm should be treated.

5. The use of dry heat and dry cold, by rubber bags containing hot water or ice. These may be used alternately.

6. The actual cantery, and very small blisters to the upper portion of the spine or along the course of the affected nerves and muscles.

Rest alone, even long abstinence for many months from writing, will not cure writer's cramp, as has been proved by the experience of many cases. The best results I have ever had have been made with cases that kept right along with their occupation—although avoiding excessive work—with the aid of mechanical appliances.

Among the hygienic devices for the relief and cure of writer's cramp are the following:

1. The device for holding the pen—a ring pen-holder—so as to relieve the thumb and fingers. An excellent arrangement of this kind has been perfected by one of my patients. By this contrivance the thumb is allowed perfect rest, and the index finger and second finger are united by rings so as to make practically one finger, which is attached to the pen-holder. The over-use of the muscles most liable to be involved in writer's cramp is thus avoided. The gentleman who perfected this *ring pen-holder* was himself substantially cured of a bad form of writer's cramp by its

use in connection with electrical and other treatment, as above described. He is a book-keeper, and can now follow steadily his occupation, although troubled at times with symptoms of weariness. He kept right on with his occupation during treatment.

2. The type-writer. This instrument is destined to be of great practical service to writer's-cramp sufferers as well as to those who, though not having the cramp, are made generally nervous and locally tired by the mechanical labor of writing.

3. The use of large pen-holders, so that the muscles may be less restricted; fastening a piece of sponge to the pen-holder, so as to relieve the pressure of the fingers.

4. Holding the pen between the different fingers, thus relieving the thumb and index finger. Great relief is afforded by this device.

5. The use of quills and very flexible pens, and pens with very broad points, so as to run easily like quills. Some pens have been sent to me from Germany that are made with this special object in view. The use of the lead-pencil is also a great relief. The mica pen and the Esterbrook stub-pen are worthy of trial.

6. Frequently changing the pen and the pen-holder and style of pen, so as to change the mode of action of the muscle. Dipping the pen for ink is usually regarded as an evil, but it doubtless saves many of us from writer's cramp.

7. Changing the position in writing, as from sitting to standing, or holding the paper in the lap. These methods of relief are to be commended, especially for those who are just beginning to have the symptoms of the disease, who are yet in the stage of exhaustion. It is a mistake to always try to point the pen toward the right shoulder. When utterly tired out, it is well to stop entirely.

8. Writing with the left hand. Out of 18 cases that tried this plan, 3 failed utterly, 6 were partially successful, and 9 were completely successful. At the beginning of the disease, educating the left hand may be of itself sufficient for a cure.

9. The use of various gymnastic and athletic exercises, as rowing, paddling, and so forth. In some cases the sufferers are unable to do many other kinds of work; carrying bundles or turning door-knobs hurts them just as writing does; but such cases are exceptions.

Telegrapher's and Musician's Cramp.—The above practical conclusions in regard to treatment apply to the other forms of professional cramp, as that of telegraphers and musicians—violinists,

organists, pianists, and harpists; also to the cramp of artists, painters, engravers, and sewing-women.

Telegraphic operators have two forms of cramp—the ordinary writer's cramp, from receiving and writing out messages; and true telegrapher's cramp, from striking the index finger on the sending instrument. The malady is quite a common one among telegraphers.

Musicians, when afflicted with cramp, have the same symptoms as writers, and are likely to suffer in both hands, although one hand may be affected quite differently from the other. This form of trouble often comes from stretching the hand in playing octaves.

WRYNECK.

The appearance of this disease every one is familiar with. The head is drawn to one or the other shoulder by the contraction of the muscles of the neck. The disease is often accompanied by considerable pain of a dull, heavy character. This pain is sometimes relieved by lying down. The head at first seems to be drawn to one side by a succession of jerks. When the disease becomes fixed the head remains constantly on one side.

Wryneck must be distinguished from a common "stiff neck," resulting from a cold or rheumatic attack in the muscles of the neck, of a *temporary duration*. *Wryneck* is a chronic affection, and is apt to be very persistent. It sometimes resists all remedies. When it once yields to treatment it is very apt to return.

In the *early stages* wryneck will sometimes yield to the electric current, or to systematized rubbing (*massage*).

In the advanced and obstinate stages there are only two methods of treatment that promise any relief. These are localized electrization with the galvanic current (see Galvanization), and the hypodermic injections of morphine and atropine (see Hypodermic Injections). It is worse than useless to torture the poor patient with blisters, and annoy him with mechanical appliances.

Neither the use of galvanization nor of hypodermic injections of morphine are well adapted or to be recommended for domestic use, except in special cases.

Those who are afflicted with obstinate wryneck, and yet cannot obtain skilled medical advice, had better attempt little or no treatment whatever, unless it be larger doses of bromide of potassium.

XERODERMA, OR ICHTHYOSIS. (See Fish-Skin Disease, page 893.)

Plate 20.



WRY NECK (*Torticollis*).



KNOCK KNEE (*Genu Valgum*.)



HIP DISEASE (*Morbus Coxarius*).



CONTRACTED JOINTS, CAUSED BY WHITE SWELLING.
(*Tumor Albus*).

WRY NECK AND DEFORMITIES OF LIMBS.

From Photographs of Life Cases in the N. Y. Orthopedic Dispensary and Hospital.
Secured and Engraved Expressly for "The New Cyclopedia of Family
Medicine."

YELLOW FEVER.

This species of fever very closely resembles the malignant or virulent typhus. The only difference is that in the former the skin is not unfrequently tinged of a yellow hue, and there is a vomiting of dark-brown matter.

This vomiting of dark or black matter is characteristic of the disease, but the yellow tinge of countenance is not so; for although a symptom generally met with, it is not universal.

Symptoms.—An attack of the disease, known under the name of yellow fever, is not unusually preceded by a defect of appetite, perverted taste in the mouth, heat in the stomach, flatulency, giddiness or pain in the head, dejection of spirits, languor, debility, and costiveness.

After a lapse of twenty-four or thirty-six hours, the patient is seized with lassitude and weariness; frequent rigors or chilliness, succeeded by flushings of the face; redness of the eyes, with pains in the eyeballs and forehead, extending in some cases backwards to the neck; great faintness, prostration of strength, and frequent sighing, with a tendency to stupor. There is excessive thirst; the tongue is coated with a tenacious fur of a dark-brown color; the spittle is viscid; the skin hot and dry; the pulse quick, small, and hard; the urine is high-colored, and scanty in quantity; but there is an unusual secretion of bile, which, getting into the stomach by a flowing back from the gall-bladder, is discharged by frequent vomiting.

In the further progress of the disease, the eyes and face in many instances become of a deep yellow color, which soon extends also to the chest; the stomach is highly irritable, and almost incessantly throws up a dark-brown or black matter; while at the same time the bowels are very costive, the urine is still high-colored, somewhat turbid, and small in quantity, and delirium of a peculiar nature arises.

It seldom happens that any perceptible remission occurs during this first stage of the fever, which usually lasts from thirty-six to forty-eight hours. At the end of this period there is generally some abatement of the symptoms; but a fresh paroxysm under a highly-aggravated form soon again takes place, and excites alarm both to the patient and his friends.

The fever proceeding in its course, with imperfect remissions and fresh paroxysms every twenty-four hours for several days, great debility becomes manifest, and symptoms indicating approaching putridity make their appearance. The tongue now becomes

dry and black; the teeth and whole of the month are coated with a very dark-brown fur; the breath is highly offensive; the whole body is in many cases of a livid yellow color; dark and fetid stools are voided; discharges of blood take place from the nostrils, mouth, and ears; hiccups ensue; the pulse intermits and sinks, and at last respiration wholly ceases.

“When the disease has been epidemic one year, it has been quite apt to return the next, or even continue to return for a series of years. This has been noticeable in the history of yellow fever since its introduction to the country in 1699.

“There is another peculiarity about the fever: that it has been apt to assume different types at different times, and, consequently, physicians who have seen the disease for the first time have not been prompt in recognizing it. According to a very intelligent description which we have of it from New Orleans, there is often an absence of the initiatory chill; there is little headache and no pain in the back or loins until the fever has set in.

“Then, malarial fever is a complication; this may run on for several days, and then turn into yellow fever; or an attack of yellow fever may run into a remittent fever. The days of greatest danger are the third, fifth, seventh, and ninth, the third being the most fatal, and each of the others less so progressively.

“The yellowness of the skin does not appear in more than one case in five. Black vomit is the most fatal symptom, and somewhat more than half the cases die when it sets in. Next in order as a frequent cause of death is congestion of the kidneys, and next congestion of the brain—which kills in ten per cent of the cases.”
—*N. Y. Medical Record*.

Causes.—Those which predispose a person to an attack of the yellow fever are intemperance, a full plethoric habit of body, intense hot and sultry weather, and exposure to night air or cold.

The exhalations arising from vegetable matter under a state of decomposition, or marsh effluvia, as they are termed by professional men, may, under a deranged state of the atmosphere from great preceding heat and drought, have given rise to this species of fever in the West Indies, particularly in persons habituated to a cold or temperate climate. It is also an unsettled point whether or not it is of a contagious nature. The opinion I hold, and ever did entertain, is that it is communicable from one person to another, or is contagious in an impure or deteriorated atmosphere, where many sick are lodged together in one room, and where there is at the same time a neglect of cleanliness and proper ventilation; but where there is a free admission of pure fresh air, and a proper attention

is paid to strict cleanliness in every respect, its contagious properties may be so diluted as to become harmless, and incapable of being communicated to another person from the one laboring under it.

The yellow fever differs from typhus in the following circumstances, viz., it usually prevails only during or immediately after very hot seasons, in which the typhus is soon extinguished; and it is in its turn completely annihilated by cold weather, in which typhus is most prevalent, if accompanied by humidity in the atmosphere.

Our opinion as to the advent of the yellow fever must be drawn from a careful consideration of the age and habit of the patient, the mode of attack, and the nature of the symptoms. The danger will be in proportion to the full and robust habit of the patient. Extreme debility, severe and incessant vomiting of dark or black matter, the sudden oppression of all the functions, tremors of the body when moved, dilatation of the pupils of the eyes, with great stupor, pensive sadness in the countenance; a weak irregular pulse, highly offensive breath, black and fetid discharges of urine and stool, and the appearance of purple or livid spots dispersed over the body—all denote that the life of the patient is likely to fall a sacrifice to the disease ere long. On the contrary, a considerable diminution of the affection of the head, a lively appearance of the eyes, free perspiration, a return of natural rest, the pulse becoming fuller and more regular, a gentle purging arising, or the urine becoming very turbid and depositing a copious sediment, and the stomach at the same time perfectly tranquillized, are to be considered in a very favorable light. The disease is apt, however, to exhibit deceitful appearances, and appears at times to be going off, when a sudden change takes place for the worse and carries off the patient; nay, some sink under it who apparently are in a state of convalescence.

YELLOW FEVER NON-CONTAGIOUS BUT INFECTIOUS.

Dr. Alfred Stillé in a paper on this subject writes:

Its propagation is by something generated in and emanating from the body of the sick, and conveyed to the well by direct contact or indirect communication with them through any medium whatever. These are the essential conditions of contagion as we see it illustrated in the dissemination of small-pox, measles, scarlet fever, typhus and typhoid fevers. Yellow fever is not propagated in this manner. In a circular issued by the Surgeon-General of the U. S. Marine Hospital Service, in September last, it is stated that "yellow-fever patients have been treated in the marine hos-

pitals at St. Louis, Cairo, Louisville, and Cincinnati without communicating the disease, the simple precaution having been taken to disinfect the clothing and other effects immediately on receiving the patients. It is a well-known fact that the unacclimated attendants upon the yellow-fever patients at the New York Quarantine do not contract the disease." And the Surgeon-General is justified in adding that "yellow fever is transported by *things*, and not by persons considered apart from their clothing." A similar judgment has been pronounced by all physicians residing in our yellow-fever cities, whose professional rank entitles their judgment to the greatest weight. The late Dr. Nott, who spent nearly all of his professional life in Mobile, and whose competency in such a question no one will doubt, states his judgment thus: "Yellow fever is not generated in the human system, *nor transmitted from one person to another in any way*; its germ or poison is generated outside of the human system, and is taken into the system after the manner of the marsh malaria poison. But, unlike the latter, its germ is portable, and may be carried from one point to another, and thus propagated." And again he says: "Few of the old and experienced physicians in the yellow-fever zone believe in the contagiousness of the disease, and their convictions are based upon facts coming under their observation. During thirty years' residence in Mobile my experience corresponded with theirs." The late Dr. Warren Stone, of New Orleans, who probably had more experience of yellow fever than any man who ever lived, stated emphatically the exact truth when he declared, "I am perfectly convinced, beyond all doubt or hesitation, that, personally, it is not contagious. I *know* that it is not." In this city, at various times during nearly a century, local epidemics of yellow fever have occurred from time to time, every one of which was distinctly traceable to vessels from infected ports. Many of the patients were received into our ordinary hospitals, and perhaps not always with due care to leave behind their infected clothing; and yet in no single instance has the disease attacked their attendants or the surrounding hospital patients. Similar illustrations without number might be cited to prove the absolute incommunicability of the disease from the sick to the well. It would be very instructive to contrast with these facts innumerable others in which yellow fever was introduced into healthy ports by vessels on board of which not a single person had at any time during the voyage suffered from the disease, showing that, although not contagious, its cause is highly infectious.

This distinction is not a deduction from scientific principles, nor

is it a convenient hypothesis; it is a plain lesson taught by plain facts, which, however, it required a modicum of common-sense to interpret, seeing how difficult it is to distinguish between the agency of a ship and its crew, and between people and their clothing. But the truth has been made plain by the results of quarantine already adverted to. When the ship and its cargo, its crew and its passengers, have been purified of the perilous stuff they brought with them from yellow-fever ports, they have become harmless in our docks and our houses.

These plain and well-established lessons were unheeded in the summer of 1878 at the port of New Orleans. Infected persons and goods found their way into the city, and in due time the germs which they introduced multiplied and spread the disease throughout the city. The panic-stricken people sought refuge in flight, and they, with their infected goods, spread the infection along the line of their exodus, eastward and northward to the Ohio River, and beyond it, until nearly 15,000 persons were sacrificed to the incompetency or connivance of those officials whose duty it was to protect the country against the entrance of the destroyer. And yet in all this desolation we do not learn that anything has occurred to prove the personal contagiousness of yellow fever. As a single illustration of the mode in which it spread, I may cite the case of Granada, Miss., a town of 2500 inhabitants, of whom 1040 were attacked with the fever, and 326, or more than 30 per cent, died. The fever first broke out in a family of which the mother had been to the railroad depot to see her daughter off to a neighboring town. The train was from New Orleans, where the fever was then raging, and the mother, it is thought, occupied a seat in the railroad car alongside of her daughter for about twenty minutes, while the New Orleans passengers were taking breakfast.

Conclusions.—1. Yellow fever originates nowhere but in the West Indies.

2. Its morbid poison is conveyed elsewhere in ships and fomites.

3. Wherever conveyed, a high temperature is essential to its propagation.

4. A strict quarantine is always efficient in preventing its dissemination.

5. It is not contagious.

6. Its essential cause cannot be isolated or defined, but must be assumed to be a specific poison.

7. This poison in the system acts primarily in two ways, by

disintegrating the blood and inflaming the stomach; and that, secondarily, it tends to impair the eliminating function of the kidneys.

Treatment.—The recent epidemic in the South resembled in most respects its predecessors. From the experience of those who attended upon the cases, it is clear that we are now no nearer to finding a specific for the disease than before, and that good nursing under the direction and with the co-operation of judicious medical advice is the chief requisite. While the average mortality was high, the percentage of deaths among the classes who were able to command good nursing and good medical aid was not very high.

In spite of all that we can do, the disease is very frequently fatal. Some epidemics are much more fatal than others.

The treatment of the mild cases is very simple. Give the patient perfect rest. Keep the sick-room freely ventilated. Sponge the body with cool water. Use mild laxatives—small doses of Epsom salts—to keep the bowels open.

Put the feet of the patient in a hot foot-bath, without raising him from the bed. This can be done by letting the patient slip down to the foot or edge of the bed, and allowing his feet to fall into a tub of hot water. Remember that *perfect rest* is necessary, and the patient must not be disturbed, even to take a foot-bath.

As the present edition (1879) of this work is going to press we hear the unpleasant tidings that the yellow fever has broken out again in Memphis.

There are two explanations of this reappearance this year in that city:

1. The poison may have been preserved in trunks or clothing through the winter. Clothing that should have been destroyed or completely disinfected has been kept and brought out during this warm weather. Or—

2. The cleansing of sewers and cesspools that should have been undertaken and completed during the winter was delayed by the authorities until the warm weather of spring, when the poison, on being disturbed, found the weather and conditions favorable to its development. It is possible that in one or both of these facts is found the explanation of the fact previously noticed that an epidemic one year is pretty sure to be followed by an epidemic the next year in the same place.

During the past year it has also been proved by the experience of one of the vessels of the United States Navy that even thorough freezing of a ship does not so completely destroy the poison that the disease may not appear on the coming of warm weather. The

explanation probably is that it is impossible to freeze *all the apertures*, nooks, and cracks of any ship, the thick walls of which furnish a home where the poison germs, if we wish to call it such, may rest for months undisturbed by any freezing in the vessel or outside of it.

On one point the best authorities and observers agree, namely, that *absolute quarantine will in this country prevent the spread of the disease*.

Keep the skin open by the spirit of mindererus (see Mindererus, Spirit of), or by a mixture of spirit of mindererus and sweet spirits of nitre, in equal parts, and in doses of a teaspoonful every two or three hours.

This treatment, cautiously carried out, is the best that we can do for the mild cases of yellow fever. It is very well known in the South, where yellow fever prevails, that the great thing in the treatment is good nursing.

I saw something of the disease in New Orleans and the Gulf of Mexico a few years since, and I am quite well convinced that the common impression on this subject is correct. In the present state of science the treatment for yellow fever is *good nursing*.

Besides the measures above indicated, severe cases of yellow fever will need special attention, according to the symptoms.

The irritability of the stomach may be relieved by swallowing bits of ice, or by one-grain (.065 gram) doses of the *oxalate of cerium*. (See Oxalate of Cerium.)

To prevent the black vomit, it is well to try the lead and opium pill—half a grain (.033 gram) of acetate of lead and half a grain (.033 gram) of opium.

If the patient becomes very much debilitated, alcoholic stimulants are often needed, just as in typhoid fever. Whiskey or brandy, or brandy-punch, may be given, as the patient seems to need them.

The sick-room and the clothing of the patient should be thoroughly disinfected. (See Disinfectants.)

The good effects resulting from cold affusion in this fever are such that it ought to be employed at a very early period. Cold water, when applied externally, when the patient is distressed with the sensation of burning heat, generally affords very great relief to his feelings. It is only, however, when the temperature of the skin is raised considerably above the natural standard that cold water should be applied externally to the body by affusion, or even by wetting it with a sponge dipped in water and vinegar; and the period of its application and the frequency of its repetition must

be regulated by the feelings of the patient; for should he become chilled by the application, much injury might ensue.

For the purpose of avoiding fatigue to the patient, which the preparation for cold affusion is likely to induce, it has been recommended that he should be covered in his bed with a single sheet wetted or wrung out in cold water, as this will reduce the heat of his body very considerably by the evaporation which takes place.

Where neither of these modes of applying cold water can be employed with convenience or safety to the patient, we ought to be content to substitute the wetting of the hands, face, and other parts of the body with a sponge dipped in vinegar and tepid water.

Some benefit may possibly be derived also from cold water, taken inwardly for drink, as the heat of the body, thirst, and severity of the fever have in many cases been moderated by frequent and small draughts of it.

If there are remissions of the fever, quinine in moderate doses may be given.

But should the fever resist our best endeavors to subdue it, and no perfect remissions be observed, but, on the contrary, run its course with violence and great exhaustion of strength, thereby threatening approaching, if not already apparent, symptoms of putrescency, the aid of the most powerful antiseptics must be called in. On some occasions a use of spirituous baths has been added.

Throughout the whole course of the disease the strictest attention must be paid to cleanliness in every respect. The linen of the bed, as also that of the body, should be changed frequently; whatever is voided by urine or stool should be immediately removed, and the chamber of the sick be kept perfectly cool, and properly ventilated by a free admission of fresh air into it. It may also be sprinkled now and then with a little warm vinegar. To assist in correcting any fetid smell, we may make use of the gaseous fumes arising from the muriatic or nitric acids.

At an early period of the yellow fever, the patient should be confined to diet of a mild nature, consisting of preparations of arrowroot, sago, barley, &c.; but as the disease advances, his strength must be properly supported by animal broths made of lean meat, such as beef-tea, veal or chicken broths, somewhat thickened by an addition of crumbled bread, oatmeal, or barley.

Many relapse after apparent recovery, simply as a result of some influence in diet.

MEDICINES: THEIR CLASSIFICATION AND USE.

Medicines are classified according to their effects upon the system. Since, however, these effects are often of a complex character, the same remedy producing different results, dependent upon the size of dose administered, condition of the patient, etc., any classification must necessarily be imperfect.

The following will serve as a safe general guide to the administration of medicines. Under each class are given a few prescriptions as examples: they comprise only those which have been found valuable in the diseases mentioned, and which do not appear in the preceding chapters.

The Doses prescribed in these Prescriptions are designed for adults. The Rules for graduating Doses, according to the age of children, and also for measuring medicines, are given on page 596.

APERIENTS AND CATHARTICS.

MEDICINES belonging to this class have the property of exciting the bowels to increased action, and in this manner promoting an evacuation of their contents. The medicines arranged in this class are very numerous, but they are not by any means alike in their method of producing the common result. While some strongly excite the intestines, and especially the muscular coat, others seem to direct their energy almost entirely to the mucous membrane with which they are lined. There are also other peculiarities in their action that it is useful to bear in mind. While some expend their chief force upon one division of the bowels, others select a different division over which to exercise their influence; while still others act with very nearly equal power upon the whole extent. It is apparent from these facts, that it is not always enough to know that the general action of a cathartic is to purge the intestines; it is useful also to know its specific virtues, and to be able to determine in advance whether it is the one that is most likely to execute the end proposed in the most salutary manner.

By taking a sufficiently large dose, purgative effects may be obtained from all, but the effects will not in all cases be equally efficient. If, for example, we select aloes, the action of which is almost wholly on the lower bowel, its operation will manifestly be

very slow, because it can scarcely be felt until it reaches that portion of the intestines where it is most active. If it passes through the upper portions without producing commotion, it is evident that evacuations obtained by its use will be chiefly from the lower, and therefore the general purgation of the bowels must be incomplete. It is not only ineffective, but it at the same time produces disagreeable, uneasy sensations, that may be avoided by using the remedy combined with other ingredients which may either assist or modify its properties. This, for instance, being the effect of aloes, if we take rhubarb, which acts most energetically on the upper intestines, and add these two together, we have produced a compound medicine that acts pleasantly on every part of the digestive tube, and accomplishes all that may be expected of a thorough purgative.

Some cathartics act upon the mucous membrane so gently as to cause an evacuation of the bowels resembling that of nature alone. Among such may be reckoned castor oil, sulphur, and rhubarb. Others act with more intensity, and promote copious watery secretions. Salts and many others belong to this rank. There are still others, such as podophyllin, that have a more complex action, and expend part of their force upon distinct organs, and excite secretions in distant parts; if in this way the liver be stimulated, a large quantity of bile will be poured into the upper intestine, which, possessing aperient properties itself, will assist the operation of the medicine.

Cathartics are divided, for the sake of convenience, into three classes. 1st. *Aperients*; 2d. *Purgatives*; 3d. *Hydragogues*. The first, sometimes also called *Laxatives*, act very gently. The second act briskly, and cause a number of copious motions. The third act violently, and cause a large number of motions of a watery character. Each kind is appropriate to certain conditions of the system.

There is no question that cathartics have been terribly abused, especially in the treatment of diseases of debility. Nervously exhausted patients need to be built up, and not pulled down. They need tonics more than cathartics. The tendency with dyspeptics is to use cathartic medicine too freely.

Some cathartics, when given in large doses, operate with great intensity, but their effects rapidly subside, and leave the bowels empty, but in a healthy condition. Others are more decidedly irritating, and in large doses produce inflammation of the stomach and intestines. It is proper, therefore, to bear in mind that excessive doses are to be guarded against; and when such seems to be

demand, it is advisable that they be used under the direction of a professional man.

Senna, Salts, etc., Infusion.—

Take of senna, half an ounce (16 grams),
Epsom salts and manna, of each an ounce (32 grams),
Fennel seed, a drachm (4 grams),
Boiling water, half a pint (256 grams).

Let it stand until cold; strain. One third may be taken for a dose, and repeated in three or four hours after, unless it has operated well. This is a mild and very certain medicine. It is an excellent cathartic to follow the use of calomel.

Pink Root and Senna Infusion.—

Take of pink root, half an ounce (16 grams),
Senna leaves, half an ounce (16 grams),
Boiling water, one pint (512 grams).

Let it stand for two hours in a covered vessel, and strain. The dose for a child two or three years old is from one to two tablespoonfuls, morning and evening. This is an excellent remedy for worms.

If a teaspoonful or two of the tincture of rhubarb be added to the dose, it improves the effects when the bowels are flatulent.

Castor Oil Mixture.—

Take castor oil, one ounce (32 grams),
Gum arabic, two drachms (8 grams),
Peppermint water, one ounce (32 grams).

The oil and gum should be well rubbed together, and the mint water added to them gradually. If quick and thorough action be desired, take the whole at a dose; otherwise, half of it.

Turpentine and Castor Oil Mixture.—

Take oil of turpentine, two drachms (8 grams),
Castor oil, one ounce (32 grams).

Mix. Take all for a dose. This makes an excellent purgative when quick and decided action is required, as in *affections* of the brain.

Syrup of Rhubarb and Soda Mixture.—

Take aromatic syrup of rhubarb, four ounces (128 grams),
Bicarbonate of soda, thirty grains (2 grams),
Water, one ounce (32 grams).

Mix. Dose; thirty to sixty drops, according to age, in the *bowel complaints* of children, so common in summer.

Magnesia, Rhubarb, etc., Mixture.—

Take of calcined magnesia, half a drachm (2 grams),
 Powdered rhubarb, two grains (.133 gram),
 Powdered white sugar, one drachm (4 grams),
 Essence of peppermint, six drops,
 Water, one and a half ounce (48 grams).

Mix. A teaspoonful to be given every two hours to young children when they need an aperient, especially during the period of suckling and teething. It corrects the *acidity of the stomach*.

Rhubarb and Aloes Pills.—

Take powdered rhubarb, half a drachm (2 grams),
 Aloes, twenty-five grains (1.666 gram),
 Castile soap, half a drachm (2 grams),
 Simple syrup to make the whole into a suitable mass.

Divide into twenty pills. Dose: two at bedtime. This is a very good aperient in cases of habitual constipation.

Croton Oil Pills.—

Take of croton oil, one drop,
 Crumb of bread, enough for four pills.

Mix them together and divide. Dose: one every hour until they operate. This is a very powerful medicine, but if taken in a proper dose acts kindly.

Elaterium Pills.—

Take extract of gentian, five grains,
 Extract of elaterium, half a grain.

Make a pill: one is to be taken every hour until watery stools are obtained. One of the best remedies to remove the fluid accumulations of dropsical patients.

Rhubarb and Magnesia Powder.—

Take powdered rhubarb, four drachms (16 grams),
 Calcined magnesia, six drachms (24 grams),
 Powdered ginger, two drachms (8 grams).

Mix. Dose: two teaspoonfuls. This is a good remedy in *dyspeptic* headache, when the stomach is suffering from *acidity*.

Powder of Sulphur and Cream of Tartar.—

Take of sublimed sulphur, four drachms (16 grams),
 Cream of tartar, one ounce (32 grams).

Mix. Dose: for children, a teaspoonful, and for adults, a table-

spoonful, mixed in molasses or syrup, three times a day. This will be found very serviceable in *piles*.

Seidlitz Powders.—

Take tartrate of soda and potash, two drachms (8 grams),
Bicarbonate of soda, two scruples (2.666 grams); make one powder.
Take powdered tartaric acid, twenty-five grains (1.666 grams).

The two powders are to be dissolved in separate tumblers, each about one third full of cold water. Pour one into the other, and drink while they are effervescing.

This is an aperient very grateful to the stomach, and will often quiet *nausea* when other medicines would be rejected.

ENEMATA, OR PURGATIVE INJECTIONS.

The quantity of fluid proper for different ages is about four to six ounces for a child between one and six years of age; a half a pint for the age between ten and fifteen years; and a pint or more for an adult.

Senna and Epsom Salt Injection.—

Infusion of senna, one pint (512 grams),
Epsom salts, two drachms (8 grams).

Use one half of the quantity at a time.

Castor Oil, Molasses, and Salt Injection.—

Castor oil, two ounces (64 grams),
Molasses, two ounces (64 grams),
Common salt, one ounce (32 grams),
Flax-seed infusion, one pint (512 grams).

Table Salt Injection.—

Take of table salt, a tablespoonful (16 grams),
Tepid water or gruel, one pint (512 grams),
Sweet oil, a tablespoonful (16 grams).

All to be used at once for an adult.

Epsom Salt Injection.—

Take of Epsom salts, an ounce and a half (48 grams),
Tepid gruel, one pint (512 grams),
Turpentine, one tablespoonful (16 grams).

This is more powerful than the preceding. It may be used in preference to the other when the head is much affected, as in *apoplexy* or *convulsions*.

Injection for a Child.—

Take of warm gruel, five ounces (160 grams),
Table salt, two teaspoonfuls (8 grams),
Sweet oil, six teaspoonfuls (24 grams).

If the bowels contain much wind, or if there be convulsions, add a teaspoonful or two of turpentine.

Almost any of the purgatives may be used for injections in the proportion of three times more than is necessary when taken by the mouth. In many cases a *large* injection of water, or common sea-water, is sufficient when the intention is merely to obtain a motion for the relief of ordinary constipation. Water at the temperature of 60 degrees is better than if it is warmer, as it imparts tone to the lower intestines.

EMETICS.

This is a class of medicines that act especially on the stomach, and cause it to discharge its contents by vomiting. There are a large number of medicines which are capable of producing such effects, if given in sufficient doses, but many of them are uncertain in their operation, or violent in their action. Most of the cathartics, under peculiar conditions, may cause nausea and vomiting; and we often experience difficulty in administering them on account of the disturbance they excite in the stomach. But some medicines affect the stomach especially, and from these we choose as emetics only those whose action is prompt and efficient, but at the same time safe.

Before administering emetics, the condition of the patient ought carefully to be considered. Emetics are improper in rupture, pregnancy, or in any case in which a strong physical effort might cause injury. They should not be resorted to when there is inflammation of the stomach; nor can they be given with propriety when there is great exhaustion.

To promote vomiting, large draughts of warm water or camomile tea; or tickling the inside of the month with a feather, as far back as can be reached with the finger, will be found of service in assisting the action of the medicine.

To prevent excessive vomiting apply stimulants over the region of the stomach, of which perhaps the best is a mustard poultice, will usually afford relief. A little brandy and water, spiced; a little cold tea; a teaspoonful of camphor-water occasionally given; a table-spoonful of lime-water, and the same quantity of milk,

mixed together and drank cold, every fifteen minutes; an effervescent draught, made by adding two teaspoonfuls of lemon-juice, or ten grains (.666 gram) of tartaric acid to twelve grains (.800 gram) of the bicarbonate of potash or soda; a little oxalate of cerium or bismuth; or, finally, small quantities of cold iced water, or small bits of ice to dissolve in the mouth, will generally accomplish the object for which they are given and check the violent throes of the stomach.

Mustard.—

Take of powdered mustard, one drachm (4 grams),
Warm water, half a pint (256 grams).

Mix, and swallow it all at one draught. This produces prompt vomiting, and is a good emetic.

Table Salt Solution.—

Take of table salt, one tablespoonful (16 grams),
Warm water, half a pint (256 grams).

Dissolve and drink it at once.

Like the preceding one, this is an emetic that is generally at hand ready for any emergency. It is prompt in its action, and causes free vomiting without subsequent nausea. Both may be used in preference to others in cases of indigestion, causing often *sick headache*, etc.

Ipecacuanha Powder.—

Take the powder of ipecacuanha, two scruples (2.666 grams).

This is to be divided into two doses, one of which may be given mixed with syrup or molasses, and succeeded by a tumblerful of warm water. If one powder does not answer, in twenty minutes the second may be taken in the same manner.

This is one of the most useful emetics that we possess. It is always safe to give it when, from the tendency to irritation in the stomach, many other substances of this class might do injury. There is, besides, but little danger of administering too much; for whether twenty grains, or fifty, or one hundred (1.333—3.333—6.666 grams) be taken, the first effect of vomiting will bring most of it up again, so that no serious effects will follow.

Sulphate of Copper Powder.—

Take of sulphate of copper, two grains (.133 gram).

Give it in a little syrup and water.

This medicine is very rarely employed for this purpose, except in cases of poisoning, when the sensibility of the stomach has been greatly impaired, and after other articles have failed. It should be followed immediately with a large draught of warm water.

Sulphate of Zinc Powder.—

Take sulphate of zinc, fifteen grains (1 gram).

Mix with syrup or molasses ; all of it should be taken at once, if prompt effects are desired, as in *poisoning*. Copious draughts of warm water should follow immediately.

DIAPHORETICS.

This class of medicines act by promoting perspiration. They are very important remedies, and are useful in a great variety of cases. The free action of the skin is always necessary to sound health ; and if this be interfered with, as it often is when the body is suffering from disease, it is a matter of much importance to have it re-established. Suddenly checking perspiration when the body is in health, as every one knows, is a very common cause of disease ; and this commonly falls most heavily upon such organs as, either from accidental or hereditary conditions, are least able to contend with it. This is not a suitable place for an exposition of the physiological uses of the perspiratory functions ; but when I state that the skin of a person of ordinary size daily exhales from two to five pounds—the quantity varying with circumstances—it will readily be inferred that it cannot be suspended with impunity, and that it has some great end to subserve.

To promote perspiration the patient should get into bed, and be moderately covered with clothing. Warm drinks freely used will also conduce to this purpose ; and there are certain other methods by the application of artificial heat—as with hot bricks, bottles of hot water, hot sand-bags, hot vapor introduced under the bed-clothes through a suitable tube, or hot air conducted to the body in a similar manner—that are often employed in particular exigencies. (See *Turkish and Russian Baths*.)

In fevers it would be a great mistake to increase the external heat, whether by an increase of bed covering, or by warmth directly conveyed to the surface. In such cases the skin is already too hot, and it often happens that a reduction of the temperature is the best means for obtaining moisture. When the heat is great and the skin dry, the body should be cooled by withdrawing as much covering as may be necessary to lower the morbid temperature to that

point at which the patient feels comfortable. Even sponging with cold water in many instances, when the warmth is very distressing, has been found good practice.

It often occurs, after diaphoretic medicines have been administered in vain, that cooling the surface by any such means as have been mentioned acts with magical power; and a remedy which previously was worse than useless will now cover the skin with a life-giving dew.

Nitre, Ammonia, etc., Mixture.—

Take sweet spirits of nitre, three drachms (12 grams),
 Solution of acetate of ammonia, three ounces (96 grams),
 Nitrate of potash, two scruples (2.666 grams),
 Camphor water, four and a half ounces (144 grams),
 Lemon syrup, two drachms (8 grams).

Mix. Dose: two tablespoonfuls every four hours, in *fevers*. Proportional doses to children in the collapsed stage, when the head is much affected, and they are inclined to *sleep*.

Carbonate of Ammonia and Lemon-juice Draught.—

Take carbonate of ammonia, fifteen grains (1 gram),
 Fresh lemon-juice, half a drachm (2 grams),
 Water, pure, seven drachms (28 grams),
 Syrup, two teaspoonfuls (8 grams).

Mix. Take all at a dose, and repeat it every six hours. This is a cooling diaphoretic, and may be given in *fevers* when the *skin* is *hot*.

Carbonate of Potash and Lemon-juice Draught.—

Take of carbonate of potash, one scruple (1.333 gram),
 Fresh lemon-juice, half an ounce (16 grams),
 Water, pure, one ounce (32 grams),
 Antimonial wine, twenty drops (1.333 gram),
 White sugar, one scruple (1.133 grams).

Mix. Use as in the preceding prescription. It possesses more decidedly diaphoretic properties.

Pleurisy Root Infusion.—

Take of pleurisy root, one ounce (32 grams),
 Boiling water, one pint (512 grams).

Infuse. Dose: a tablespoonful to be taken warm every two hours. This is considered a very good diaphoretic.

Boneset Infusion.—

Take of boneset, one ounce (32 grams),
Boiling water, one pint (512 grams).

Infuse for half an hour. Dose: a wineglassful every half hour, as hot as possible.

Blessed Thistle Infusion.—

Take of the leaves of blessed thistle, one ounce (32 grams),
Boiling water, one pint (512 grams).

Infuse. Dose: a wineglassful, as frequently as the stomach will allow without vomiting, will produce copious perspiration, and may be used in slight *fevers* and *colds*.

Virginia Snake-root Infusion.—

Take of Virginia snake-root, one ounce (32 grams),
Boiling water, two pints (1024 grams).

Infuse for two hours in a covered vessel, and strain. Dose: two to four tablespoonfuls every two hours in *low forms of fever*, when the system requires support. It is useful in *fever and ague*, and is frequently employed in *measles* when the eruption has receded, or is tardy in making its appearance. In this latter case it is best to give it warm.

Effervescing Draught.—

Take of carbonate of potash, two drachms (8 grams);
Water, four ounces (128 grams). Dissolve.
Fresh lemon-juice, two ounces (64 grams),
Water, two ounces.

Mix, and keep in separate vessels. Dose: two tablespoonfuls of the acidulated water is to be mixed with one of the potash solution, and the whole drunk while it is foaming. When lemon-juice cannot be obtained, eighty grains (5.333 grams) of tartaric acid dissolved in four ounces (128 grams) of water, a tablespoonful of which is to be used at a time, will answer as a substitute for it. This is a pleasant diaphoretic in *fevers*, and is admirable in allaying *nausea* and *cholera morbus*.

Ipecacuanha and Opium Powder.—

Take of ipecacuanha, powdered, half a drachm (2 grams),
Powdered opium, half a drachm (2 grams),
Sulphate of potash, half an ounce (16 grams).

Dose: ten or fifteen grains (.666–1 gram) of this powder, known commonly as Dover's powder, may be given for a dose. It is an admirable diaphoretic and anodyne, and is applicable to all

cases when the head is not affected, and the stomach will bear its use. It is especially useful in *rheumatism*, *inflammation of the lungs*, and other inflammatory affections. It is useful in *diarrhea*, *dysentery*, and *bleeding* from internal organs. Ten grains of the powder contain one grain of opium.

DIURETICS.

Medicines of this class stimulate the kidneys and increase the secretion of urine. They act best when the skin is cool and the bowels are quiet. If there be active purging or copious sweating, the secretion of the kidneys will be very sensibly diminished. A medicine, therefore, possessing diuretic properties, if administered in quantities, or combined with purgatives, so as to produce a cathartic effect, will no longer excite the kidneys; and its influence will either be wholly lost, or directed to the bowels. When combined with diaphoretics, they in the same manner lose their specific properties, and either aid the medicines with which they are conjoined, in promoting the cutaneous exhalation, or answer no good purpose whatever. In compounding medicines, these facts should be kept in view; for an attempt to accomplish everything by uniting medicines having antagonistic actions will only be successful in rendering the dose less effectual. The effect of diuretics is increased by drinking largely of water or any other bland fluid; but in some cases, as in dropsy, the object for which the remedy is taken would be defeated if the blood vessels were kept full of water by large potations.

Digitalis, Acetate of Potash, etc., Mixtures.—

Take infusion of digitalis, three and a half ounces (112 grams),
Cinnamon-water, three and a half ounces (112 grams),
Acetate of potash, two and a half drachms (10 grams),
Vinegar of squills, three drachms (12 grams),
Tincture of opium, ten drops (666 grams).

Mix. Dose: two tablespoonfuls three times a day. May be used in any form of *dropsy*.

Bearberry Decoction.—

Take of leaves of bearberry, one ounce (32 grams),
Water, one pint (512 grams).

Boil fifteen minutes and strain. Dose: two to four tablespoonfuls three or four times a day. Useful in *gravel*, *chronic inflammation* of the *kidneys*, *catarrh* of the *bladder*, and most other

affections of these organs. It has also been very highly extolled by an English physician in *consumption of the lungs*.

Nitrate of Potash Mixture.—

Take nitrate of potash (saltpetre), three drachms (12 grams),
Peppermint-water, ten and a half ounces (336 grams),
Sweet spirits of nitre, three drachms (12 grams),
Lemon syrup, one ounce (32 grams).

Dose : one or two tablespoonfuls in *dropsy*.

Acetate of Ammonia Mixture.—

Take of the solution of the acetate of ammonia, two ounces (64 grams),

Acetate of potash, two drachms (8 grams).

Mix. Dose : a tablespoonful every three hours.

This may be given in *dropical affections*, and in *gravel* when the deposit has a brick-dust color, evincing uric acid in the urine.

Juniper Berries Infusion.—

Take of bruised juniper berries, one ounce (32 grams),
Boiling water, one pint (512 grams).

Infuse. Dose : a wineglassful six times a day. Used in *dropsy*.

Balsam of Copaiba Mixture.—

Take copaiba, half an ounce (16 grams),
Sweet spirits of nitre, half an ounce (16 grams),
Gum arabic, powdered, one drachm (4 grams),
Sugar, powdered, one drachm (4 grams),
Spirits of lavender, two drachms (8 grams),
Tincture of opium, one drachm (4 grams),
Water, four ounces (128 grams).

Mix. Dose : a tablespoonful three or four times a day. A remedy in *gonorrhœa*, a specific disease of the urinary organs.

Oil of Turpentine Mixture.—

Take oil of turpentine, one hundred drops,
Gum arabic, powdered, two drachms (8 grams),
Sngar, powdered, two drachms (8 grams),
Peppermint-water, four ounces (128 grams).

Mix. Dose : a tablespoonful several times a day. Useful in disease of the *kidneys*, and when a *stone* is passing from the kidneys to the bladder ; in *rheumatism*, and in *bleeding* from the stomach or lungs when there is no arterial excitement.

Pipsissewa Decoction.—

Take of pipsissewa (wintergreen), one ounce (32 grams),
Water, one pint (512 grams).

Boil fifteen minutes, and strain. Dose: a wineglassful three or four times a day. In *dropsy*, in which there is debility of the stomach and bowels. It is also serviceable in *gravel* and disease of the *kidneys*, and has been thought particularly valuable in *scrofula*, and in some kinds of *eruptions* on the skin.

EXPECTORANTS, OR COUGH MIXTURES.

This class of medicines is designed to relieve the mucous membrane of the lungs by increasing the secretion of mucus. In this way inflammation and congestion of the membrane is removed. Many remedies are expectorants under peculiar circumstances; thus even blood-letting, when the lungs are suffering from an inflammation of an acute kind, and the ordinary secretion is consequently suspended, may act as a remedy of this description. But there are certain medicines that more directly belong to the class of expectorants, and appear to have a kind of specific tendency to the lungs. When expectorants are used the body should be kept well protected from atmospheric changes, and from severe cold. The patient should also avoid, so far as possible, the breathing of cold air. If such precautions be neglected, the purpose for which the remedy is administered will be partially if not wholly defeated. *Expectorants are very much abused. They are expected to do far more than they are able to accomplish. Excessive use of them, especially in consumption, does but little good in the way of relieving the cough, and weakens the stomach.*

Ipecacuanha Wine Mixture.—

Take of wine of ipecacuanha, three drachms (12 grams),
Syrup of tolu, 5 drachms (20 grams),
Powdered gum arabic, one drachm (4 grams),
Water, one ounce (32 grams).

Rub the gum and water first together, and then add the other ingredients.

Dose: a teaspoonful every hour. For common *cold*, with tightness of the chest. In smaller doses this is a very good mixture for children.

Syrup of Squills Mixture.—

Take of paregoric elixir, half an ounce (16 grams),
 Syrup of squills, one ounce (32 grams),
 Antimonial wine, two drachms (8 grams),
 Water, six ounces.

Mix. Dose: a teaspoonful every fifteen minutes, until the cough is relieved. For *colds, bronchitis*, etc.

Liquorice Mixture.—

Take of powdered extract of liquorice, two drachms (8 grams),
 Powdered gum arabic, two drachms (8 grams),
 Hot water, four ounces (128 grams). Dissolve, and add
 Antimonial wine, two drachms (8 grams),
 Laudanum, half a drachm (2 grams).

Mix all together. Dose: a tablespoonful, to be taken occasionally in *influenza*.

Coxe's Hive Syrup.—

Take of squills, one ounce (32 grams),
 Seneca snake-root, one ounce (32 grams),
 Water, one pint (512 grams).
 Boil down one half, and strain. Add
 Clarified honey, half a pound (192 grams),
 Tartrate of antimony, twelve grains (.800 gram).

Mix. Dose: ten drops to a teaspoonful, for a child, according to age. This is a celebrated remedy in *croup*, and may be advantageously used in other affections of the lungs.

Bloodroot Tincture.—

Take of the saturated tincture of blood-root twenty-five to forty drops, two or three times a day.

Highly recommended in *consumption*.

Wild Cherry Bark Infusion.—

Take of wild cherry bark, bruised, an ounce (32 grams),
 Water, one pint (512 grams).
 Let it stand for twelve hours, and strain.

Dose: a wineglassful three times a day. It calms the pulse in the *hectic* of *consumption*, and acts as a *tonic* at the same time. .

Wild Cherry Infusion and Mixture.—

Take of the infusion of wild cherry, one pint (512 grams),
 Ipecacuanha wine, one ounce (32 grams),
 Laudanum, two drachms (8 grams),
 Syrup, two ounces (64 grams).

Mix. Dose: a wineglassful three times a day. Preferable, in most cases, to the preceding, in *consumptive* diseases.

ANTHELMINTICS, OR VERMIFUGES.

Anthelmintics, or vermifuges, are medicines possessing the property of destroying or expelling worms from the intestinal canal. Many medicines are capable of accomplishing this result, but there is a class that specifically manifest such a power. It is customary to combine remedies of this class with some one or more of those having purgative action, by which means their effects are much improved. As the action of these medicines, however, is merely temporary, it is proper, as soon as the worms are dislodged, to employ means calculated to restore the digestive organs to a healthy condition, and to correct that peculiar state which favors their production. The means best adapted to this purpose are such as improve the general health. The body should be kept warm with suitable clothing, the diet should be nutritious, and, if necessary to invigorate by medical agency, bitter tonics, with gentle aperients, may be administered. In some cases, when the system is nearly bloodless, as is known by the pallid countenance, the preparations of iron prove to be the most suitable tonics that can be given.

It is perhaps more difficult to ascertain when worms exist in the stomach and bowels than it is to destroy them. It is very much the fashion to assume, whenever a child is mopish, that it is tormented with these vermin. Sometimes the conjecture proves to be correct, but more frequently it is wrong. Worm medicines in either case are had recourse to, and should there be no worms to rout, the chances are that the child will really be made worse by the quantities of remedies it is unhappily compelled to take.

We throw out these hints to save children from being unnecessarily tortured. If there be good reason for believing that a child has worms, and especially if any have been passed at stool, then the remedies of this class should be judiciously tried. But if the opinion is merely a doubtful guess, it is better, after making a moderate experiment, without any confirming result, to abandon their use, and take the advice of a physician. (See *Worms*.)

Santonine Powders.—

Santonine, six grains (.400 gram),
Sugar, fifteen grains (1 gram).

Mix, and divide into eight powders. To a child *five* years old give one powder night and morning.

Kousso Infusion.—

Kousso, half an ounce (16 grams),
Boiling water, ten ounces (320 grams).

Dose: four ounces (128 grams) every hour. Used for tape-worm.

Pumpkin Seed Emulsion.—

Pumpkin seed, two ounces (64 grams).

Remove the shells and mix in a mass. Then add gradually eight ounces (256 grams) of water. Take the whole quantity in three doses. Used for tape-worm.

Turpentine Mixture.—

Take of oil of turpentine, half an ounce (16 grams),
Yolk of egg, one,
Peppermint-water, two ounces (64 grams).

Mix. Take all for a dose, for *tape-worm*; or it may be given in smaller doses, and repeated three or four times in twenty-four hours. For a child between two and five years of age, a teaspoonful of oil of turpentine, mixed as directed, will be sufficient. Turpentine is less likely to act on the urinary organs when taken in a large dose than when taken in a small one, as it passes off through the bowels as a purgative. It may also be mixed with castor oil. Thus, for a child,

Take oil of turpentine, half an ounce (16 grams),
Castor oil, one ounce (32 grams).

Mix, and give three teaspoonfuls once a day.

Pink-Root, etc., Infusion.—

Take of Carolina pink-root, half an ounce (16 grams),
Senna, two drachms (8 grams),
Manna, one ounce (32 grams),
Fennel seed, two drachms (8 grams),
Boiling water, one pint (512 grams).

Let it infuse in a covered vessel for an hour, and then strain. A wineglassful may be given to a child from two to four years old three times a day. This is an excellent remedy against the common round-worm resembling the earth-worm.

Aloes Injection.—

Take of aloes, twenty grains (1.333 grams),
Milk, four to six ounces (128–192 grams).

Dissolve the aloes, and use it for an injection. This is suitable

for the destruction of the *ascarides*, a little worm that often infests the lower bowel in great numbers. For a child five to ten years of age. Lime-water may also be used with excellent results.

STIMULANTS.

Stimulants are a class of remedies that excite, in a transient way, the vital powers. They increase the vigor of the body, and some of them exalt the intellectual faculties. They have different modes of action, some producing strong effects on both the nervous and arterial systems, and arousing every organ of the body, while others appear to affect more especially the brain, spinal marrow, and the nerves proceeding from them. (See *Stimulants and Narcotics*.)

Ammonia, etc.—

Take of camphor water, six ounces (192 grams),
Carbonate of ammonia, one drachm (4 grams),
Sweet spirits of nitre, three drachms (12 grams).

Mix. Dose: one tablespoonful may be taken frequently when there is *fainting*.

Milk Punch.—

Brandy, two ounces (64 grams),
Milk, four ounces (128 grams),
Sugar to suit the taste.

Dose: a tablespoonful or more every hour or two. Used in typhus and typhoid fevers.

Egg-nog.—

One egg,
White sugar, two drachms (8 grams).
Mix, and beat into a froth; then add
Sherry wine, half an ounce (16 grams),
Water, one ounce (32 grams).

This preparation is nutritious, tonic, and stimulating.

Nutmeg may be added to suit the taste.

Valerian and Ammonia Draught.—

Take of valerian, one scruple (1.333 grams),
Carbonate of ammonia, ten grains (.666 gram),
Cinnamon-water, two ounces (64 grams).

Take the whole at once, and it may be repeated every fourth hour. In *nervous headache* and *low spirits*.

Wine Whey.—

Take of fresh milk, half a pint (256 grams),
Madeira wine, one or two ounces (32–64 grams).

Boil the milk and then add the wine. Used in *fevers* when the system requires support. It is a mild stimulant.

NARCOTICS, ANODYNES, SOPORIFICS, AND NERVINES.

The medicines of this class are very numerous, and for practical purposes in this place may embrace sedatives, anodynes, and soporifics. Most of them primarily produce a stimulating effect on the nervous and vascular systems; but this is soon succeeded by a depression of the vital powers and sleep. If the stimulating effect only be desired they should be administered in small doses, and frequently repeated. When given with the intention of causing sleep, the dose ought to be larger, and repeated at more distant intervals. Some individuals are nearly insensible to their action, while others can scarcely endure the smallest quantities, becoming either stupefied or excessively excited.

Habit influences the action of narcotics on the system more than any other circumstance, their power being diminished in a remarkable degree by repetition; it is therefore necessary, where their continued use is required, gradually to augment the dose, in order to obtain their proper effects. *These are remedies that are very greatly abused.* (See *Sleeplessness*.)

NARCOTICS AND ANODYNES.

Anodyne Plasters.—

Lead plaster, two drachms (8 grams). Melt, and add gradually,
Powdered opium, half a drachm (2 grams),
Powdered camphor, half a drachm (2 grams).

Used for painful joints, backache, lumbago, etc.

Plaster of Opium and Camphor.—

Powdered opium, half a drachm (2 grams),
Powdered camphor, half a drachm (2 grams),
Burgundy pitch, one ounce (32 grams).

Mix with lead, as much as may be necessary. Used for neuralgia.

Belladonna Plaster.—

Extract of belladonna, one drachm (4 grams),
Glycerine, half a teaspoonful (2 grams).

Mix, and spread on adhesive plaster. Excellent for neuralgia, backache, etc.

NERVINES.

These have a calming, quieting influence on the nervous system. They produce sleep and allay irritability, and to a certain extent relieve pain.

Chlorodyne is made according to the following formula:

Chloroform, four drachms,
Sulphuric ether, two drachms,
Theraica, one drachm,
Mucilage of gum arabic, one drachm,
Muriate of morphine, eight grains,
Dilute hydrocyanic acid, two drachms,
Oil of peppermint, four drops.

Chlorodyne can only be made by a chemist. Other anodynes are sometimes added besides those mentioned. The dose is from five to ten drops. It is given in those cases where an anodyne is needed.

Guarana and Caffeine Mixture.—

Elixir of guarana, one ounce,
Bromide of ammonia, half drachm,
Citrate of caffeine, one half grain.

Dose: one or two teaspoonfuls every hour until relief is obtained. This is a combination of remarkable efficacy. For sick headache.

Henbane, etc., Draught.—

Take of tincture of henbane, one drachm (4 grams),
Camphor water, two ounces (64 grams).

Mix. To be all taken at once at bedtime, and repeat it in two hours if the patient does not sleep. An excellent narcotic draught where from any cause opium is inadmissible.

Foxglove, etc., Mixture.—

Take of tincture of purple foxglove, three drachms,
Camphor water, six ounces,
Orange syrup, one and a half ounces,
Prussic acid, six drops.

Mix. Dose: two tablespoonfuls two or three times a day. An

excellent remedy in *nervous palpitations*. It is a powerful medicine, and must only be used with great care.

Mixture for Sleeplessness.—

Bromide of potassium, four drachms,
Hydrate of chloral, one drachm,
Peppermint-water, four ounces.

Dose: one tablespoonful in water before retiring. But all mixtures containing hydrate of chloral should be used with caution. There is danger of becoming a slave to this powerful drug.

Morphine Pill.—

Take of sulphate of morphia, three grains (.200 gram),
Conserve of roses, sufficient to make pills, and divide into twelve.

Dose: one pill (which is equivalent to a grain of opium) when necessary.

Lettuce Pill.—

Take of extract of lettuce ten grains (.666 gram).

Divide in five pills. Dose: one, which may be repeated at the end of two hours if sleep be not procured.

Camphor Pill.—

Take of camphor, half a drachm (2 grams),
Gum and alcohol, sufficient quantity to make pills.

Divide into fifteen. Dose: a pill every two hours. To quiet *nervousness*, and to act gently on the skin.

Opium Pill.—

Take of powdered opium, twenty grains (1.333 gram),
Castile soap, four scruples (5.333 grams).

Beat together, and divide into five-grain pills. Useful when an opiate is required. Each pill contains one grain of opium.

Tasteless Cod Liver Oil Emulsion.—

Cod liver oil, four ounces,
Glyconin, nine drachms.

Glyconin is made by thoroughly triturating glycerine and yolk of egg, equal parts. Add to the glyconin fifteen drops of the essential oil of bitter almonds, then add the oil to the glyconin, *VERY SLOWLY*, drop by drop, stirring vigorously all the time. The success of the emulsion depends on the thoroughness with which this task is performed. Then add, Jamaica rum, two drachms; dilute

phosphoric acid, half an ounce. The dose is one teaspoonful after each meal, but if that acts badly on the stomach, begin with less, and gradually increase. As brain and nerve-food the above cod liver oil emulsion is most excellent. It is used largely by Drs. Gray and Andrews in the Utica Insane Asylum, and in private practice it has been found valuable in nervous diseases of various kinds. When properly made it has very little of the cod liver oil taste, and will keep a long time.

ANTISPASMODICS.

These are medicines that counteract irregular or involuntary muscular action, which is known as spasm. This deranged state of the system depends on so many different causes, and is produced by so many different sources of irritation, that its successful treatment will very frequently depend on the employment of remedies calculated to remove the more remote cause or source of irritation by which the spasmodic affection is produced. It hence follows that, under peculiar circumstances, the remedies which will be found most successful in counteracting spasm must be derived from very distinct divisions of the *Materia Medica*; and thus the term anti-spasmodic may become applicable to a narcotic, a sedative, a stimulant, a cathartic, a tonic, and several other kinds of medicines. There are, however, certain substances which exercise a direct control over spasmodic action, independent of any influence upon its exciting causes, and these are meant when antispasmodics are spoken of.

Valerian, Ether, etc., Mixture.—

Take of aniseed water, two ounces (64 grams),
Ammoniated tincture of valerian, thirty drops (2 grams),
Spirit of sulphuric ether, one drachm (4 grams).

Mix. Take one half of this for a dose, and repeat it two or three times a day. In *hysterics, epilepsy, etc.*

Wood-Soot Tincture.—

Take of pure wood-soot, two ounces (64 grams),
Assafœtida, one ounce (32 grams),
Proof spirit, thirty-two ounces (1024 grams).

Let it stand for three days, and strain. Dose: one teaspoonful, three or four times a day. For children it must be proportionally reduced.

Hoffman's Anodyne, etc., Mixture.—

Take of Hoffman's anodyne, three drachms (12 grams),
 Tincture of opium, one and a half drachms (6 grams),
 Cinnamon-water, six ounces (192 grams).

Mix. Dose: tablespoonful every one or two hours. In *hysterics*, or *cramp* in the *stomach*.

Assafœtida, etc., Mixture.—

Take of assafœtida, one drachm ($\frac{1}{2}$ grams),
 Peppermint water, three ounces (96 grams).
 Dissolve, and add,
 Ammoniated tincture of valerian, two drachms (8 grams),
 Tincture of castor, three drachms (12 grams),
 Sulphuric ether, one drachm ($\frac{1}{2}$ grams).

Mix. Dose: a tablespoonful (with plenty of water) every second hour. In *hysterics*.

Assafœtida Pill.—

Take of assafœtida, one drachm ($\frac{1}{2}$ grams),
 Soap, ten grains (.666 gram),
 Water, sufficient, and make twenty pills.

Dose: one or two, three times a day. To relieve *hysterical* symptoms.

TONICS.

Tonics constitute a class of medicines, the continued administration of which, in debilitated and relaxed conditions of the body, imparts strength and a more vigorous feeling, without producing, as stimulants do, any sudden excitement. To a certain extent tonics are stimulants, inasmuch as they arouse the vital energies; but the excitement has more the character of health, and is permanent. If, however, they are given when the system is unimpaired by disease, their primary action, like that of stimulants, is followed by prostration.

There is no class of remedial agents that requires more discrimination in its administration than tonics; nor any the injudicious use of which more frequently produces evil consequences. The diseases in which this class of substances should be principally employed are evidently those of diminished power. But diminished power is often the consequence or concomitant of irritation or inflammation of the organs of digestion, and under such circumstances tonics will rather aggravate than mitigate the affection. To

be used with effect, this condition must first be removed by such means as are pointed out in other parts of this work. Independent of their tonic properties, some of the medicines of this class possess the power of arresting those diseases that are distinguished by regular paroxysms. Peruvian bark is an example of this kind of remedies, and from its universal application to fever and ague, is called a *febrifuge*, or a medicine that checks fever. It cannot, however, be imagined that either this, or the other remedies having the same specific power over periodical fever, are *directly* antagonistic to its phenomena, for they are equally efficacious in other periodical diseases, in which febrile excitement may be altogether absent. This subject of antiperiodic remedies is one of great interest, and is involved in much obscurity; but as this is not the place for its investigation, we can do no more than merely refer to it, as has been done, and pass it by. Some of our best tonics are not drugs, but rather methods of treatment; such as *travelling, sea and shower bathing, general electrization, movement cure, etc.*

Pyrophosphate of Iron Mixture.—

Pyrophosphate of iron, one drachm,
Syrup, two ounces,
Cinnamon-water, two ounces.

Dose: a tablespoonful *after* each meal. Used as a tonic in nervous diseases.

Among the tonic prescriptions which in cases of necessity may be prepared and used at home are these:

Mixture of Cinchona - Valerian.—

Tincture cinchonæ, one ounce and a half (48 grams),
Tincture valerian, one ounce (32 grams),
Peppermint-water, four ounces (128 grams).

Mix, and take a tablespoonful three or four times a day. Used in nervousness and debility.

Sulphate of Quinine in Syrup.—

Sulphate of quinine, sixteen grains (1.066 grams),
Syrup of ginger, two ounces (64 grams).

Mix, and take from one to four teaspoonfuls before the attack comes on. Used in ague.

Mixture of Arsenic and Iron.—

Fowler's solution, one drachm (4 grams),
Elixir of bark, three ounces (96 grams),
Citrate of iron, two drachms (8 grams).

Mix, and take two teaspoonfuls after each meal.

Elixir of Pepsin.—

Pepsin, one drachm and a half (6 grams),
Water, six drachms and a half (26 grams),
Sherry wine, twelve drachms and a half (50 grams),
Alcohol, three drachms (12 grams),
Sugar, one ounce (32 grams).

Dissolve and strain. Take a tablespoonful, containing fifteen grains of pepsin, after each meal. Used for dyspepsia.

Syrup of the Hypophosphites of Lime, Soda, and Potash.—
This preparation is now frequently recommended as a tonic in consumption and general debility. Though it does not do all that is expected of it, it is yet oftentimes of great service.

The formula for it is as follows :

Hypophosphite of lime, six drachms (24 grams),
Hypophosphite of soda, two drachms (8 grams),
Hypophosphite of potash, two drachms (8 grams),
Hot water, ten ounces (320 grams).
Dissolve, strain, and add
Sugar, fourteen ounces (448 grams).
Dissolve, strain, and add
Water of orange flowers, half an ounce (16 grams).

Mix, and take a teaspoonful three or four times a day.

The formula for this preparation is given so that those who take it may know what they are taking. It is not necessary to prepare this at home.

Compound Licorice Powder.—

Powdered fennel seed, two ounces,
Powdered licorice root, two ounces,
Powdered senna, one and a half ounces,
Sugar, six ounces.

This powder, given in doses of from one to four teaspoonfuls in water before retiring, is one of the best remedies for constipation that I know of. Apparently very mild, it is yet very effective.

Thompson's Solution of Phosphorus.—

Phosphorus, one grain,
 Alcohol absolute, five drachms,
 Glycerine, twelve drachms,
 Alcohol, two drachms,
 Spirit of peppermint, two scruples.

Dose: from twenty to forty drops. Some can take a small teaspoonful.

A Tonic of Fowler's Solution.—

Fowler's solution, one ounce,
 Tincture of belladonna, two drachms.

Dose: from five to ten drops after meals.

Tonic Pills.—

Sulphate of quinine, one grain,
 Camphor powder, one grain,
 Extract of nux vomica, one fifth of a grain,
 Extract of hyoseyamus, one grain.

One pill to be taken every four hours on an empty stomach. This is excellent in hay-fever.

Sulphate of Quinine etc., Mixture.—

Take of sulphate of quinine, twenty grains (1.333 grams);
 Diluted sulphuric acid, twenty-five drops,
 Orange syrup, one ounce (32 grams),
 Water, five ounces (160 grams).

Mix. Take a tablespoonful four times a day. To be taken during the intermission in fever and ague. In some cases the dose may be doubled with advantage. It may also be used as a tonic in convalescence after a fever.

Dog-wood Bark Decoction.—

Take of dog-wood bark, bruised, one ounce (32 grams),
 Water, one pint (512 grams).

Boil for ten minutes, and strain while hot.

Dose: two ounces, frequently repeated. Substitute for Peruvian bark in *fever and ague*, and as a general tonic. It answers a very good purpose, and in parts of the country where no other remedy can be obtained may be resorted to with every hope of success.

Willow Bark Decoction.—

Take of willow bark, one ounce (32 grams),
Water, one pint (513 grams).

Boil for ten minutes, and strain.

Dose: four tablespoonfuls four or five times a day. This is another substitute for Peruvian bark in *fever and ague*, and is thought by many to be very little inferior to it.

Boneset or Thoroughwort Infusion.—

Take of the boneset leaves, dried, one ounce (32 grams),
Boiling water, one pint (512 grams).

Let it stand for two hours, and then strain. This is another medicine that has been employed as a substitute for Peruvian bark in the treatment of fever and ague. It is not equal to it, but will often cure. In all cases of debility, when a tonic is required, it may be used; and if there be also some fever, perhaps no better can be employed. Dose: for *ague*, as much as the stomach will bear, and should be taken *warm*; as a simple tonic, a wineglassful four times a day, cold.

Compound Infusion of Gentian.—

Take of bruised gentian, half an ounce (16 grams),
Dried orange peel, one drachm (4 grams),
Coriander, bruised, one drachm (4 grams),
Alcohol, diluted, four fluid ounces (128 grams),
Water, cold, twelve ounces (384 grams).

Let it stand for twelve hours, and strain.

Dose: two tablespoonfuls three times a day. This is an excellent tonic, and may be used in all cases of debility of the *digestive organs*, if there be no irritation or inflammation of the stomach.

Colomba, Ginger, etc., Infusion.—

Take of colomba, bruised, half an ounce (16 grams),
Ginger, bruised, half an ounce (16 grams),
Senna, two drachms (8 grams),
Boiling water, one pint (512 grams).

Let it stand for an hour, and strain.

Dose: a wineglassful three times a day. An excellent remedy in *dyspepsia* with constipation and flatulence.

Huxham's Tincture of Bark.—

Take of Peruvian bark, in powder, two ounces (64 grams),
 Orange peel, one and a half ounce (48 grams),
 Virginia snake-root, bruised, three drachms (12 grams),
 Saffron and red saunders, rasped, each one drachm (4 grams),
 Alcohol, diluted, twenty ounces (640 grams).

Let it stand for fourteen days, and filter through paper.

Dose: from one to four teaspoonfuls. This is an excellent *stomachic cordial*. If a grain or two of quinine be added to each dose, it is a very excellent remedy for *fever and ague*, and will often succeed when the other preparations of bark have failed.

Green Vitriol, etc., Mixture.—

Take of green vitriol, four grains (.266 grams),
 Aromatic sulphuric acid, twenty drops,
 Syrup, half an ounce (16 grams),
 Water, one ounce (32 grams).

Mix. Dose: a teaspoonful to be taken three times a day in a wineglass of water. A very good tonic when there are no inflammatory symptoms present. None of the preparations of iron should be administered when the patient is plethoric or inclined to fever. Good in *chlorosis* or *green-sickness* and for restoring *monthly sickness*.

Iron and Aloes Pills.—

Take of sulphate of iron, three parts;
 Aloes, two parts,
 Aromatic powder, six parts,
 Conserve of roses, eight parts.

Mix. Divide into five-grain (.333 gram) pills.

Dose: one to three. This is a good pill in *green-sickness* and *interrupted menstruation*.

Rhubarb and Iron Pills.—

Take of sulphate of iron, four parts,
 Extract of rhubarb, ten parts,
 Conserve of roses, five parts.

Mix. Divide into five-grain (.333 gram) pills.

Dose: two to four. A *stomachic*.

ALTERATIVES.

These are medicines that re-establish the healthy functions of the animal economy without producing any active evacuation.

Their effects are *slow*, but positive, and oftentimes exceedingly beneficial. In order to get the alterative effect of any medicine it is generally necessary to give it in *small* doses, frequently repeated, for a long time. *Calomel*, *arsenic*, *cod liver oil* are classed among the alteratives, although calomel in large doses is a cathartic, and arsenic and cod liver oil are tonics. *Iodine* is the most prominent of the alteratives.

Iodide of Potassium Mixture.—

Iodide of potassium, one drachm (4 grams),
Syrup of ginger, one ounce (32 grams),
Water, five ounces (160 grams).

Take a tablespoonful three times a day. Used in syphilis.

Iodide of Potassium and Sarsaparilla Mixture.—

Iodide of potassium, two scruples (2.666 grams),
Water, three ounces (96 grams),
Sugar, one ounce (32 grams),
Fluid extract of sarsaparilla, half an ounce (16 grams).

Dose: One tablespoonful three times a day. Used in syphilis.

ASTRINGENTS.

This is a class of medicines which, when applied to a sensible or visible part of the body, produces a contraction or condensation. The consequence of their action is a diminished secretion; and most if not all of them act, finally, as tonics.

It is for their property of constraining the tissues that they are arranged under this head, regardless of any other qualities they may possess. Astringents have the power not only of checking secretions of the part with which they are directly in contact, but also that of parts more or less remote.

Remedies of this class cannot safely be resorted to in every case in which a discharge is too great. It is only when diseases are of long standing and have become chronic, or when there is no accompanying constitutional excitement, that they can properly be employed.

There are certain other medicines, though not belonging to the class of astringents, that are equally powerful in arresting internal secretions. They do this by establishing a new train of actions incompatible with the secreting functions. Some of the narcotics have this property. Opium furnishes a striking example of such

substances. Ipecacuanha, acting by a different process, will also cause a similar general result.

Chalk Mixture.—

Take of prepared chalk, half an ounce (16 grams),
Sugar and gum arabic, each two drachms (8 grams),
Cinnamon-water and water, each four ounces (128 grams).

Rub together until thoroughly mixed.

Dose: one to two teaspoonfuls, in the *purging of children*, when there is no fever. This is a very well-known and a very excellent mixture.

Cascarilla, etc., Infusion.—

Take of infusion of cascarilla, six drachms (24 grams),
Cinnamon-water, two drachms (8 grams),
Compound powder of kino, ten grains (.666 gram),
Laudanum, eight drops.

Mix. Dose: all at once—to be taken twice a day. In relaxation of the bowels after *dysentery*. For a young child, one fourth of this quantity.

Logwood Decoction.—

Take of rasped logwood, one ounce (32 grams),
Cinnamon, one drachm (4 grams),
Water, two pints (1024 grams).

Boil down to a pint, and strain. Dose: two ounces repeated several times a day; for a child two years of age, two teaspoonfuls. This is an excellent astringent in *chronic diarrhea* and *dysentery*, for which it is peculiarly suitable, as while it checks the discharge it does not produce the opposite condition—constipation. It has also been used in the sweating of *consumption*.

Rhatany Infusion.—

Take of rhatany, one ounce (32 grams),
Boiling water, one pint (512 grams).

Let it stand for four hours, and then strain. Dose: two to four tablespoonfuls. This is a powerful astringent and tonic, and is much employed in the treatment of *chronic diarrhea* and *dysentery*, in *passive hemorrhages*, in *bleeding from the womb* and *kidneys*, and in *mucous discharges*, that seem kept up by debility of the part.

Oak Bark Decoction.—

Take of oak bark, one ounce (32 grams),
Water, two pints (1024 grams).

Boil to one pint, and strain. Dose: one to four ounces. Used

like the preceding. Very good, and always at hand. It is also a useful injection for *whites*, and is sometimes serviceable, employed in this way, in *falling of the womb*.

Hope's Cholera Mixture.—

Take of camphor-water, four ounces (128 grams),
Nitric acid, four drops,
Laudanum, fifty drops.

Mix. Dose: a tablespoonful every two hours. In *diarrhea* and *dysentery*. This mixture is somewhat celebrated, and is much employed by medical men.

Sugar of Lead and Opium Pills.—

Take of sugar of lead, powdered, one scruple, (1.333 gram),
Opium, ten grains (.666 gram),
Gum arabic and water, sufficient quantity.

Divide in ten pills. Dose: one pill every two hours. In bleeding from the *lungs* and other internal organs. These may be used even when there is considerable excitement of the pulse, as they have the effect of a sedative. It is well to remember that the *carbonate* of lead *may* produce the painter's colic. In taking this medicine, therefore, it is advisable to drink a little vinegar and water between the doses, to prevent any such serious consequences. The sugar of lead and opium is also an admirable remedy, reducing the quantity of opium one half, in *chronic diarrhea* and *dysentery*; and it is recommended by some practitioners very highly in *Asiatic cholera*.

Tannin and Opium Pills.—

Take of tannin, thirty grains (2 grams),
Powdered opium, six grains (.400 gram),
Gum arabic and water, sufficient quantity.

Divide into fifteen pills. Dose: one every two or three hours. In *chronic diarrhea* and *dysentery*.

GARGLES.

Borax Gargle.—

Take of borax, one drachm (4 grams),
Tincture of myrrh, half an ounce (16 grams),
Pure honey, one ounce (32 grams),
Water, four ounces (128 grams).

Mix. Useful in *scorbutic affections* of the gums, and for cleansing the mouth.

Sage Tea, Alum, and Honey Gargle.—

Sage tea, one pint (512 grams),
Alum, half an ounce (16 gram
Honey, one ounce (32 grams).

Used for all kinds of sore throat.

Chlorate of Potash Gargle.—

Chlorate of potash, two drachms (8 grams),
Tepid water, one pint (512 grams).

Used for quinsy and other forms of sore throat.

Alum Gargle.—

Take of alum, powdered, two scruples (2.666 grams),
Water, four ounces (128 grams).

Mix. In *relaxation of the palate and bleeding gums.*

PLASTERS.

The following description of the method of preparing plasters is taken from the United States Dispensatory :

“Plasters are solid compounds intended for external application, adhesive at the temperature of the human body, and of such a consistence as to render the aid of heat necessary in spreading them. Most of them have as their basis a compound of olive oil and litharge, constituting the *Emplastrum plumbi* of the United States Pharmacopœia.

“Plasters are prepared for use by spreading them upon leather, linen, or muslin, according to the particular purposes they are intended to answer. Leather is most convenient when the application is made to the sound skin ; linen or muslin when the plaster is used as a dressing to ulcerated or abraded surfaces, or with the view of bringing and retaining together the sides of wounds. The leather usually preferred is white sheepskin.

“A margin about a quarter or half an inch broad should usually be left uncovered, in order to facilitate the removal of the plaster, and to prevent the clothing in contact with the edges from being soiled.”

Belladonna Plaster.—

“Take of resin plaster, three ounces (96 grams),
Extract of belladonna, an ounce and a half (48 grams).

“Add the extract to the plaster, previously melted by the heat of a water-bath, and mix them.”

Galbanum Plaster.—

“Take of litharge plaster, two pounds (908 grams),
Galbanum, half a pound (227 grams),
Yellow wax, sliced, four ounces (113.5 grams).

“Add the litharge plaster and wax to the galbanum, previously melted; then melt the whole together with a moderate heat, and strain.”

Lead Plaster; Litharge Plaster.—

“Take of semi-vitrified oxide of lead, in very fine powder, one pound and a quarter (567 grams),
Olive oil, a quart (1024 grams); water, half a pint (256 grams).

“Boil them together over a gentle fire, stirring constantly, until the oil and oxide of lead unite into a plaster. It will be proper to add a little boiling water, if that employed at the commencement be nearly all consumed before the end of the process.”

Adhesive Plaster.—

“Take of resin, in powder, half a pound (227 grams),
Lead plaster, three pounds (1361 grams).

“To the lead plaster, melted over a gentle fire, add the resin, and mix them.”

OINTMENTS.

These are made by mixing lard, spermaceti, wax, etc., with some medicinal substance.

Glycerine Ointment.—

White wax, half a drachm (2 grams),
Oil of almonds, two ounces (64 grams).
Mix by heating, and then add,
Of glycerine, one ounce (64 grams).

Used for chapped hands, abrasions of the skin, and sore lips.

Iodide of Sulphur Ointment.—

Iodide of sulphur, thirty grains (2 grams),
Lard, one ounce (32 grams).

Used for itch, eczema, and other diseases of the skin.

Carbolic Acid Ointment.—

Carbolic acid, five grains (.333 gram),
Lard, one ounce (32 grams).

Used in diseases of the skin.

Veratria Ointment.—

Veratria, twenty grains (.666 gram),
Lard, one ounce (32 grams).

Used for neuralgia.

Galls, etc., Ointment.—

Take of powdered galls, one drachm (4 grams),
Opium, half a drachm (2 grams),
Lard, one ounce (32 grams).

Make an ointment. An astringent ointment for *piles*, after the inflammatory stage has passed away.

Tar Ointment.—

Take of tar, suet, each an ounce (32 grams).

Make an ointment. For *piles*. It may also be used for *scald-head*.

Simple Ointment.—

Take of lard, one pound (453 grams),
White wax, four ounces (113 grams).

Melt together and stir till cold. Useful as a common dressing to *sores* and *inflamed surfaces*.

Oxide of Zinc Ointment.—

Take of oxide of zinc, one ounce (32 grams),
Lard, six ounces (192 grams).

Mix. A drying ointment; used in *burns*, *blisters*, *excoriations*, various *skin diseases*, and in chronic inflammation of the *eyelids*.

Stavesacre Ointment.—

Take of powdered stavesacre, one ounce (32 grams),
Lard, three ounces (96 grams).

Melt together, let it stand for three hours, and strain. In *itch*, and to destroy *vermin* on the body.

Cold Cream.—

Take of oil of almonds, two ounces,
Spermaceti, half an ounce,
White wax, one drachm.

Melt together, and while cooling add two ounces of rose-water, stirring it until cold. For chapped hands, lips, etc.

Hair Oil.—

Take of olive oil, sixteen ounces,
 Cognac brandy, sixteen ounces,
 Oil of bergamot, half an ounce,
 Otter of roses, ten drops. Mix.

Iodine Ointment.—

Take of iodine, half a drachm (2 grams),
 Iodide of potassium, one drachm (4 grams),
 Rectified spirit (alcohol), one drachm (4 grams).

Rub together, and add two ounces (64 grams) of lard. Used in *enlarged glands, scrofulous sores, etc.*

Itch Ointment.—

Take flowers of sulphur, two ounces (64 grams),
 Sulphate of zinc, two drachms (8 grams),
 Powdered hellebore, four drachms (16 grams),
 Soft soap, four ounces (128 grams),
 Lard, eight ounces (256 grams). Mix.

Iodoform Ointment for Burns.—

Iodoform, ten drachms,
 Unguent cetacei, one ounce,
 Ext. conii, a drachm and a half,
 Acid. carbol., ten drops.

This ointment is spread twice daily on soft linen, and applied over the inflamed surface, and then enveloped in oil silk. No other dressing is necessary.

Suppositories containing iodoform and ergot are excellent for piles. The only objection is the unpleasant odor of the iodoform.

LINIMENTS AND LOTIONS.

Liniment for Burns.—

Take of olive or linseed oil, and lime-water, equal parts.
 Mix, and agitate well. For severe *burns*.

Lotion of Creosote.—

Creosote, ten drops,
 Olive oil, one ounce (32 grams).

Used for diseases of the skin and ulcers.

Compound Chloroform Liniment.—

Chloroform, one ounce (32 grams),
 Ether, one ounce (32 grams),
 Spirit of camphor, one ounce (32 grams),
 Laudanum, one ounce (32 grams),
 Tincture of cayenne pepper, half an ounce (16 grams).

Used for neuralgic and rheumatic pains.

Lotion of Glycerine and Borax.—

Borax, half a drachm (2 grams),
 Rose-water, eight ounces (256 grams),
 Glycerine, half an ounce (16 grams).

Used for sore nipples, chapped lips and hands.

Lotion of Tannin and Glycerine.—

Tannic acid, fifteen grains (1 gram),
 Glycerine, one ounce (32 grams).

Lotion of Carbolic Acid.—

Carbolic acid, five grains (.333 gram),
 Water, one ounce (32 grams).

Used for burns and ulcers.

Soap Liniment.—

Take of castile soap, four ounces (128 grams),
 Oil of rosemary, five drachms (20 grams),
 Camphor, two ounces (64 grams),
 Alcohol, one and a half pint (766 grams).

Mix and dissolve. This is used in *rheumatism, swellings, bruises, sprains, local pains*, etc.

Opium Liniment.—

Take of soap liniment, six ounces (192 grams),
 Laudanum, two ounces (64 grams).

Mix. An excellent anodyne in *rheumatism, neuralgia, sprains*, etc.

FOMENTATIONS.

When fluids are applied to any special portion of the body by means of a cloth, the process is called a fomentation.

Anodyne Fomentation.—

Extract of opium, one ounce (32 grams),
 Water, one pint (512 grams).

This is used for neuralgia and rheumatism.

Fomentation of Soap.—

Soap, one ounce (33 grams).

Alcohol, two pints (1024 grams).

Used for sprains.

POULTICES.

Mustard Poultice.—

Take of powdered mustard, two ounces (64 grams),

Vinegar, as much as necessary to make a poultice.

This may be too strong for young children or persons having very thin skins. In such case, from one third to one half of flour or Indian meal may be added, and instead of vinegar, water may be employed. It is seldom that it can be borne longer than half an hour.

Flax-seed Poultice.—

Take of ground flax-seed, one part,

Barley meal, one part,

Water, enough to make a poultice.

Used for *painful inflammations* of all kinds.

Yeast Poultice.—

Take of flour, one pound,

Yeast, half a pint.

Mix. To be applied warm to *foul-smelling* and *gangrenous* sores.

Charcoal Poultice.—

Take bread-and-milk poultice, and stir into it as much fine powdered charcoal as it will allow. Used to old and *foul ulcers* that have a *fetid* smell, and to *gangrenous sores*.

Slippery-elm Poultice.—

Take any quantity of slippery elm, and moisten it with hot water. This is a poultice that is excellent for *irritable sores*, when a soothing effect is desired.

If a more sedative effect be wished, half an ounce of *larudanum* may be added to either the bread, flax-seed, or slippery-elm poultice.

It may be added that poultices should never be made unnecessarily heavy nor thick, and they should be frequently repeated. They always ought to be put on warm, and as moist as they can be made without being so soft as to flow when placed upon the skin. When they become dry, and the temperature falls, they can

do but little if any good, and may possibly cause more injury than service. The common poultices are useful in all cases of inflammation that cannot be cut short, to assist the process of suppuration, and the tendency of matter to the surface.

MISCELLANEOUS PRESCRIPTIONS.

Cure for Sea-Sickness.—

Bromide of sodium, two ounces,
Water, four ounces.

Dose, one teaspoonful in a tumbler of water, four times a day, for two days before going on board ship. When at sea, double the dose can be taken. The object of this bromide treatment is to calm down the nervous system to a point where it cannot be disturbed by the motion of the ship. When at sea, and disturbed by the first stages of sea-sickness, it is an advantage to take this prescription every three hours or so, until some signs of sedation—great sleepiness or drowsiness—appear. Where the bromide cannot be taken on the stomach, it may be injected into the rectum.

SECOND PRESCRIPTION.

Sulphate of atropia, one quarter of a grain,
Water, four ounces.

Dose, one teaspoonful every hour, until the throat becomes quite dry. After which the stomach will be better able to retain bromides, or food of some kind. If the use of the atropia be continued too long, it will cause a temporary difficulty of vision, which, however, will pass away in the course of the day. A surgeon can use this atropia hypodermically.

When there is great headache—a very common symptom in sea-sickness—the following prescription is of great service, just as it is in sick-headache :

Powered citrate of caffeine, two and a half grains, dry on the tongue every hour until relief comes.

Pills of cannabis indica, in doses of one third of a grain, every hour or two until relieved, is another excellent means of treating the headache of sea-sickness.

None of the above remedies should be pushed to the extreme

when they cause injury, but there is no need of any difficulty about it. (See page 880.)

Ginger Beer.—

White sugar, twenty pounds,
Lemon-juice, eighteen ounces,
Honey, one pound,
Bruised ginger, seventeen ounces,
Water, eighteen gallons.

Boil the ginger in three gallons of the water for half an hour; then add the sugar, the juice and the honey, with the remainder of the water, and strain through a cloth. When cold, add the white of an egg, and half an ounce of the essence of lemon; after standing four days, bottle. This affords a very superior beverage, and one that will keep for many months. A very refreshing drink in warm weather.

Lemon Syrup.—

Take oil of lemon, six drachms,
Refined sugar, twelve pounds,
Water, one gallon.

Boil the sugar and water over a moderate fire, and remove the scum. While hot, stir in the oil and a quarter of an ounce of tartaric acid. When cold, bottle and cork. This is the lemon syrup that is in common use at the shops and among the confectioners.

PREScription REGISTER.

EXPLANATION.—The design of this Register

is to record prescriptions and remedies that have been proved valuable, which would otherwise be irreparably lost, or necessitate the expense of a duplicate. A proper entry, in each case, will give the disease it is intended to relieve, the date when the Physician was called, or when the medicine was used; by whom prescribed; the required dose; the Druggist compounding it, and the prescription number. Their preservation for future use will be found not only a convenience, but will often prove "a friend in need," making this an invaluable feature of the work. See annexed blank filled out.

THE PUBLISHER.

Jan. 1st, 1880.

Doctor Geo. F. Jackson.

Remedy for Asthma.

R Tincture of Lobelia,
Tincture of Henbane,
Compound Spirits of Ether,
Syrup of Tola.

One Ounce (32 Grams) each.

Dose One Teaspoonful.

How often Every Half Hour.

Remarks Well shaken before taken.

Johnson, Druggist. No. 8274.

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MATERIA MEDICA.

MEDICINES, THEIR PREPARATIONS AND DOSES.

BY

LAURENCE JOHNSON, M.D.

THE following list of medicines is designed for ready reference to the properties, uses and doses of the remedies now in use, including those newly discovered.

In the space assigned us it is impossible to compress the whole materia medica; yet it is believed that no really important remedies have been omitted.

Another aim has been to furnish reliable information concerning very many valuable plants which grow about our doors, and which are too often spurned simply because nature has provided them in such abundance.

Since the common names of plants are very often of local origin and use, the botanical name has also been given, so that any one can ascertain positively what plant is intended. To illustrate: the name *Wintergreen* is applied to several plants. When, therefore, the word alone is used, people of one section of the country would naturally think of their plant called by that name, while those of another section would quite as naturally suppose their plant to be the one referred to. The botanical name would avoid such confusion.

This plan has been followed with all medicines of vegetable origin, the botanical name of the plant used, or from which the substance used is derived, follows [in parentheses] the more common name. Where there are two or more common names in use, one or more of them will be found included in the parentheses with the botanical name.

The more valuable plants, and particularly the indigenous ones, are faithfully represented by illustrations, many of which were engraved expressly for this work from photographs of the actual plants, which will enable the reader in his search for them to recognize them at sight.

A few suggestions upon the collection and preservation of our indigenous medicinal plants for domestic use may be useful.

As a rule, all plants whose leaves or stems are to be employed should be collected when in their fullest vigor, which is about the time of flowering. They should be dried as quickly as possible in the shade, and be kept in a dry place, protected from the ravages of insects. Flowers should be collected just before they are fully expanded; seeds and fruits when fully ripe. The roots of annual plants should be collected just before they bloom; of biennials, after the first year's growth has ceased; and of perennials, in the autumn. Barks should be collected either in the autumn or early in the spring, before the season's growth has begun. Roots and barks may be dried in the sun without injury.

Many of the medicines composed of drugs obtained at the apothecaries' can be compounded by any one with ordinary care.

The compounding of drugs, which only the skilful apothecary can conduct with success, will not be undertaken by those who have occasion to use this book. The preparation of pills, plasters, tinctures and mixtures often requires a delicacy of manipulation which can only be attained by long practice. It is in general, therefore, preferable to obtain them from the apothecary, ready for use.

In domestic practice, decoctions and infusions are very frequently employed, and these are very easily prepared.

Decoctions are made by boiling the medicinal substance in water; infusions, by pouring boiling water upon it, and allowing it to cool. Both are then strained for use. Sometimes, as in the case of Wild Cherry Bark, for instance, it is necessary to infuse in cold water. The average proportion is an ounce of the drug to a pint of water.

Tinctures are made by macerating drugs in alcohol. In the case of resinous substances, strong alcohol is used; otherwise alcohol diluted with an equal quantity of water. In many cases whiskey may be substituted for dilute alcohol.

In preparing tinctures from dried roots, barks, and seeds, these must first be reduced to a coarse powder by grinding in a mill, or bruising in a mortar. As a general rule, when practicable, tinctures should be prepared from the drug when fresh, *i. e.*, when recently gathered, as then the medicinal principles will be much more readily and surely obtained. The usual proportion is an ounce of the drug to a pint of alcohol, though of many substances it is better to prepare *saturated* tinctures, by using a much greater proportion of the crude drug.

Pills are made by *accurately weighing* the substances to be used and then mixing them with water, alcohol, syrup, bread, mucilage, soap, molasses or other mild substance that will bring them to a proper consistence.

Powdered substances are usually mixed with *syrup* or *mucilage*, resins with *alcohol*, liquid remedies with *starch* or *bread*.

The mass, after it has been thoroughly mixed with a knife or spatula, should be rolled into a cylinder, and then cut off into equal portions, each portion containing the dose of medicine required. Each pill is to be rolled into a round shape between the thumb and fingers.

Only sea-captains, miners, planters, and others who are similarly situated in regard to medical advice and drug stores, will ordinarily find it necessary to make pills.

The doses here mentioned are for adults. For the rules for graduating doses for children, see page 596. For explanation of the metric system of weights and measures, see page 597.

ABSINTHE (*Artemisia absinthium*, *Wormwood*). Plate O.—Wormwood may be usefully employed in *atonic* and *flatulent dyspepsia*, and for the purpose of expelling worms. Best given in infusion, made with an ounce (32 grams) of plant in a pint (512 grams) of boiling water, which may be taken in the dose of a wineglassful.

Externally, the infusion mixed with vinegar, is often used as a lotion for bruises and sprains.

A distilled liquor, flavored with this plant, and known as absinthe, produces a peculiar kind of intoxication, and used habitually is followed by the most serious effects.

ACACIA. See Gum Arabic.

ACID, ACETIC.—The strong or glacial acetic acid is used as a caustic to destroy *warts* and *corns*, and in some skin diseases of a parasitic character.

ACID, ACETIC, DILUTED.—This, in the form of vinegar, is sometimes administered in those affections of the urinary organs when there is a white deposit in the urine caused by phosphatic salts. Often applied externally as a lotion in *bruises* and *sprains*. It has also been employed, diluted with an equal quantity of water, by injection, in cases of weakness of the bladder.

ACID, ACETIC (Pyroligneous).—Pyroligneous acid, in doses of from one to five drops, given in syrup, is often of essential service in controlling vomiting.

ACID, ARSENIOUS. See Arsenic.

ACID, BENZOIC. See Benzoin.

ACID, CARBAZOTIC. See Acid, Pieric.

ACID, CARBOLIC.—Obtained from coal tar. When pure, it is a crystalline substance, having the odor and taste of creosote. It dissolves freely in alcohol, ether, glycerine and oils. Though sometimes given internally it is much more generally employed externally, where it has a wide range of usefulness. Largely diluted with water it is an excellent application to wounds, correcting foul odors, and aiding in healing. It is much used in *skin diseases* of a parasitic nature.

As a disinfectant, the impure acid, in a liquid form, is preferable. Owing to its mixture with other products of coal-tar distillation, its odor is rather more agreeable than the pure acid, and being much cheaper, is generally used for this purpose.

ACID, CARBONIC.—Carbonic acid dissolved in water, forming the so-called "plain soda," is very often useful as a refrigerant drink, especially when the stomach is irritable. It is this gas which is disengaged in all effervescing mixtures.

ACID, CHROMIC.—One of the best of all caustics, for the removal of *warts* and other vegetations, whether seated upon the skin or mucous membrane.

ACID, CHRYSOPHANIC.—An ointment made with from twenty to

sixty grains (1.333-4 grams) of chrysophanic acid and an ounce (32 grams) of lard has been used with great success in *psoriasis*.

ACID, CITRIC.—Prepared from lemon-juice, and often used to make refrigerant drinks. In absence of lemon-juice, it is the best remedy for *scurvy*. With the bi-carbonate of potash it makes an effervescent mixture much used in acute rheumatism. It may be given in doses of from twenty to thirty grains (1.333-2 grams), largely diluted.

ACID, GALLIC.—A powerful astringent, often used to check passive hemorrhages, as those from the *nose, lungs, stomach, and womb*. The dose is from five to twenty grains (.333-1.333 gram).

ACID, HYDROBROMIC.—First employed to prevent the unpleasant head symptoms caused by quinine. It has since been successfully employed in a variety of nervous affections, as *whooping-cough, muscular spasm, neuralgia*, and *tinnitus aurium*, or ringing of the ears.

The dose is from half a teaspoonful to a teaspoonful, largely diluted. It may be given in mixture with quinine when it is desired to prevent the unpleasant effects of the latter.

ACID, HYDROCHLORIC. See Acid, Muriatic.

ACID, HYDROCYANIC. See Acid, Prussic.

ACID, LACTIC.—At one time this acid was used in *diphtheria* and *membranous croup*, with the idea of dissolving and removing the false membranes. Soon, however, it fell into disrepute, and is now seldom employed.

ACID, MURIATIC (*Hydrochloric acid*).—The strong acid is sometimes used as a caustic. Diluted muriatic acid is used in certain forms of *dyspepsia* and in low fevers. In dyspepsia, characterized by sourness of the stomach, this acid is often of essential service. It should be taken immediately after meals, in a dose of ten or fifteen drops with a wineglassful of water. In fevers, the dose varies from ten to thirty drops every two or three hours. Of the strong acid from three to five drops may be given.

ACID, NITRIC (*Aqua fortis*).—Strong nitric acid is often used as a caustic. Diluted nitric acid is used for the same purposes as diluted muriatic acid. It is also used with success in various diseases of the liver, especially when characterized by jaundice. The dose is from ten to thirty drops, largely diluted with water.

ACID, NITRO-MURIATIC (*Aqua regia*).—The strong acid is not used medicinally. Diluted, it is used for the same purposes as diluted muriatic and nitric acid, and in about the same doses.

ACID, OXALIC.—Not used medicinally. Owing to its close resemblance to epsom salts, it is not unfrequently taken by mistake, causing serious poisonous effects. The best antidote is powdered chalk; in absence of chalk, lime water, or dried whitewash may be used.

ACID, PHOSPHORIC, DILUTED.—Phosphoric acid is often used for the same purposes as the nitric and muriatic acids. It is supposed, however, to have more effect upon the nervous system, and is used therefore in cases of nervous depression, *melancholy*, the *night-sweats* of consumption, etc. The dose is from twenty drops to a teaspoonful in a glass of water.

ACID, PICRIC (*Carbazotic acid*).—Dose, $\frac{1}{50}$ to $\frac{1}{10}$ of a grain.

ACID, PRUSSIC (*Hydrocyanic acid*).—This is a dangerous, but very valuable remedy. It is often useful as a palliative in *whooping-cough*,

and in other coughs of a *nervous character*. In painful diseases of the *stomach*, as *gastralgia* and *ulcer*, with or without *vomiting*, it is also very valuable. Dose, one to three drops.

ACID, SALICYLIC.—Within the past few years salicylic acid has attracted great attention. It is believed by many to be almost a specific for *acute rheumatism*. Certain it is, that many cases of this disease yield to salicylic acid, or its compounds, the salicylates, very quickly. It has been employed in many other diseases, as *scarlet fever*, *diphtheria*, *typhoid fever*, etc., but without definite results. To obtain certain effects from its use in rheumatism it must be given in doses of from ten to forty grains (.666–2.666 grams) every two hours. When the pain diminishes, the frequency of the doses may be diminished also. Salicylic acid possesses decided disinfectant properties which make it, in solution, a valuable application to wounds and sores.

ACID, SULPHURIC (*Oil of vitriol*).—The strong acid is sometimes used as a caustic. Diluted sulphuric acid is used in low *fevers*, *scurvy*, *purpura*, *night-sweats*, and *passive hemorrhages*. It is also often valuable in *chronic diarrhœa*, and in *lead colic*. The same may be said of

ACID, SULPHURIC, AROMATIC (*Elixir vitriol*).—The dose of either is from ten to twenty drops, largely diluted.

ACID, SULPHUROUS.—Used externally in skin diseases. Is an excellent application for the relief of *itching of the anus and scrotum*.

ACID, TANNIC (*Tannin*).—Obtained from nutgalls. One of the most powerful of vegetable astringents. It is used to restrain hemorrhages from the *nose*, *lungs*, *stomach*, *bowels*, *womb*, etc., and to check the discharge in diarrhœa. Locally it is applied to fissures of the *nipples* and *anus*, and to *piles* and *prolapse of the rectum*. Injections of a solution of tannin are often used in leucorrhœa and gleet. The dose is from three to ten grains (.200–.666 gram). For external use it may be dissolved in water or glycerine.

ACID, TARTARIC.—Used in the preparation of *Seidlitz powders*.

ACONITE (*Aconitum napellus*, *Monk's-hood*). Plate A.—The leaves and root are used. Aconite is an arterial sedative, of great value in the forming stage of acute inflammations generally, as *quinsy*, *pneumonia*, *pleurisy*, *rheumatism*, *erysipelas*, and the fever resulting from injuries. The best preparation for ordinary use is a tincture of the root, which may be given in doses of one or two drops every hour or two until the pulse falls, and sweating is produced.

ÆTHER.—See Ether.

AGRIMONY (*Agrimonia eupatoria*). Plate A.—A very common native plant, possessing mild astringent qualities. A decoction of both leaves and root may be used, in doses of a cupful, three or four times daily, in relaxation of the bowels. Also as a gargle in sore throat.

ALCOHOL (*Spirit of wine*).—Strong alcohol is used in the preparation of tinctures of substances containing a large proportion of resinous or resinoid properties. Diluted alcohol, *i.e.*, alcohol diluted with an equal quantity of water, is generally employed in the preparation of tinctures of substances whose virtues are mainly soluble in water. In this case the alcohol acts merely as a preservative agent. In very many instances whisky, which contains about fifty per cent of pure alcohol, may be substituted for dilute alcohol when the latter cannot be readily obtained. The use of alcohol as a remedial agent

is spoken of so frequently in the body of the work that it need not be alluded to here.

AILANTHUS (*Ailanthus glandulosa*, *Chinese Tree of Heaven*).—The bark is useful in atonic *dyspepsia*, *loss of appetite*, etc. It may be given in decoction, infusion, or tincture.

ALKEKENGE (*Physalis alkekengi*, *Winter cherry*, *Strawberry tomato*).—Diuretic and tonic. Believed to be useful in *jaundice*, *gravel*, and *dropsy*. The powder of the herb may be used in doses of a drachm (4 grams); the berries, which also possess diuretic properties, may be eaten at will.

ALLSPICE (*Eugenia pimenta*). Plate K.—An aromatic stimulant, used to relieve flatulence. The oil may be given in doses of from two to six drops.

ALMOND, BITTER (*Amygdala amara*).—Plate N.

ALMOND, SWEET (*Amygdala dulcis*). The pulp of bitter almonds is very poisonous, on account of the *prussic acid* which it contains. The pulp of sweet almonds, on the contrary, is perfectly bland and is sometimes used instead of wheaten flour in preparing bread for patients suffering from *diabetes*. See Acid, Prussic.

The oil of bitter almonds is often used instead of prussic acid, in the dose of a quarter of a drop to one drop.

The oil of sweet almonds is perfectly bland, and may be used for the same purposes as olive oil.

ALOE (*Aloe vulgaris*, *A. spicata*, *A. Socotoria*). Plate F.—The dried juice. This medicine is an excellent purgative, and one of the most certain in its action we possess. It does not produce watery stools nor create wind in the bowels, rarely disagrees with the stomach, and when taken in small doses assists digestion. It is particularly useful in cases of habitual costiveness in connection with indigestion, and answers well with hypochondriacal people, and those of sedentary habits; it is also serviceable when the constitution is sluggish or serofulous. Aloes, when combined with myrrh and a preparation of iron, is beneficial in obstruction of the menses, and when given in conjunction with small doses of blue-pill has been found one of the best medicines in jaundice.

It acts principally on the lower intestines, and has a tendency to irritate them when given too frequently or in too large doses. Hence, it ought not to be given to those who have piles, except in small doses, nor when there is inflammation of the bowels, and should be particularly avoided by females who are subject to immoderate flowing of the menses. It is improper when there is any disease of the womb, during pregnancy, and also during the period of the menstrual discharge. Aloes is usually given in the form of pills; the dose is from five to fifteen grains (.333–1 gram); it is, however, seldom taken alone, but generally with iron, mastic, or assafoetida.

ALUM.—Astringent. Used to check bleeding from the *nose*, *gums* after extraction of teeth, slight wounds, and sometimes from *piles*. It may be applied in powder or solution. In nosebleed the powder may be blown into the affected nostril through a quill. Solutions of alum are useful in chronic discharges from the nose, the ear, and female genital organs. The proper strength to use in these cases is about a drachm (4 grams) to the pint (512 grams) of water.

In purulent inflammation of the *eyes*, especially when affecting

newly-born infants, a solution of five or six grains (.333 gram) to one ounce (.32 gram) of water may be dropped into the eyes every hour or two, with advantage, at least until a physician can be called.

A gargle of alum is useful in some cases of *sore throat*, especially when the parts are relaxed, and the "palate down." Burnt alum—alum deprived of its water of crystallization by heat—is applied with benefit to sores where there is "prond flesh."

Internally, alum is sometimes used in diarrhœa and dysentery. In the later stages of *whooping cough* it will often do much good; here it should be given in doses of two or three grains (.133–.200 gram) dissolved in aromatic syrup, three or four times daily.

As an emetic in *spasmodic croup*, there is no better remedy. When a young child, who has gone to bed, perhaps perfectly well, awakes in the middle of the night in a paroxysm of croup, prompt vomiting with alum will often quiet all symptoms which give anxiety. It does not nauseate like ipecac or squills, but acts promptly and efficiently, leaving the stomach in good condition for further medication. For this purpose a teaspoonful of powdered alum may be mixed with a tablespoonful of molasses and water, and given in doses of a teaspoonful every five minutes until the desired effect is produced.

AMMONIA (*Hartshorn*).—A gaseous body, freely soluble in cold water, making Water of Ammonia (*Aqua ammonia*), from which it is again easily expelled by heat. It is a powerful, diffusible stimulant, and often used to restore persons in a fainting condition. Care should be taken, in employing it for this purpose, not to use too strong preparations, and not to hold the bottle containing it to the nose for too long a time, as the gas is extremely irritating to the mucous membrane lining the air passages. Several other preparations are used, viz.:

AMMONIA, ACETATE, SOLUTION OF (*Spirit of Mindererus*).—May be readily prepared by neutralizing vinegar with carbonate of ammonia. A diaphoretic, much used in febrile and inflammatory affections. Dose: a teaspoonful to a tablespoonful every two or three hours. Many physicians add a drop or two of tincture of aconite root to each dose of the solution, thus greatly increasing its efficiency.

AMMONIA, AROMATIC SPIRIT OF.—Useful in *headache*, especially when attended with acidity of the stomach and flatulence. Dose: a half teaspoonful to a teaspoonful, mixed with water.

AMMONIA, BENZOATE OF.—Used in the same class of cases as benzoic acid. Dose: ten to twenty grains (.666–1.333 gram). See Benzoin.

AMMONIA, CARBAZOTATE.—Used in intermittent fever. Dose, $\frac{1}{4}$ – $\frac{1}{2}$ grain.

AMMONIA, CARBONATE OF.—Used as a stimulant in inflammation of the lungs (*Pneumonia*), and in low fevers, as typhoid and typhus, and in scarlet fever, when the patient is in a low typhoid condition. Dose: five grains (.333 grams) every two or three hours.

AMMONIA, IODIDE OF.—Used externally, in the form of a solution, or an ointment in *diseases of the skin, enlarged glands*, etc.; internally employed, its effects are analogous to those of the iodide of potassium. Dose: five to ten grains (.333–.666 gram).

AMMONIA MURIATE (*Chloride of ammonium, Sal ammoniac*).—

Stimulant and alterative. Much used in catarrhal inflammation of the air passages, and of mucous membranes generally; also in gout, rheumatism, and neuralgia. It is a useful addition to gargles for throat troubles, and may also be employed by inhalation. The fumes of sal ammoniac are used by aurists in the treatment of inflammation of the middle ear.

It is a valuable addition to cough mixtures, especially when there is a deficiency of expectoration. In *true croup*, its action is probably as beneficial as any remedy which can be employed. The dose is from five grains to half a drachm (.333-2 grams), repeated every two or three hours.

AMMONIA, NITRATE OF.—Used in the preparation of nitrous oxide, or laughing gas.

AMMONIA, VALERIANATE OF.—Used in nervous troubles, as *nervous headache, neuralgia, hysteria, and palpitation of the heart*. Dose: from two to ten grains, (.333-.666 gram) dissolved in some aromatic water.

ANGELICA (*Archangelica atropurpurea of the U.S. and A. officinalis of Eu.*).—A pleasant aromatic and carminative, though little used. May be given in doses of half a drachm (2 grams) to a drachm (4 grams) of either the dried root or seeds. The fresh root of the American species is acrid, and said to be poisonous. The acidity is, however, dissipated in drying.

ANGUSTURA BARK. (*Galipea officinalis and G. cusparia*).—A stimulant tonic. It has been found particularly serviceable in the bilious diarrheas and dysenteries of hot climates; it has also been very successfully employed in the malignant fevers of the tropics. Dose: from ten to thirty grains (.666-2 grams). It is also given in infusion, tincture, and extract.

ANISE (*Pimpinella anisum*). Plate N.—A pleasant aromatic carminative, that relieves pain in the bowels from flatulence, and may be used whenever the stomach requires stimulating. Used much for flavoring liquors and for making a cordial. A decoction is useful in the colic pains of young infants. Dose: in powder, twenty to thirty grains (1.333-2 grams); oil, two to five drops.

ANTIMONY.—A metal, not used medicinally in its pure state. Its various preparations, though formerly much in vogue, have of late years fallen into disuse.

ANTIMONIAL POWDER. (*James's powder*).—A diaphoretic, used in the early stages of febrile diseases and inflammatory affections. Dose: three to ten grains (.200-.666 gram) every four hours.

ANTIMONY, SULPHURET OF.—Seldom employed alone. Is one of the constituents of *compound calomel pills (Plummer's pills)*, which are used in the treatment of chronic rheumatism, and of scaly and other eruptions of the skin, especially when accompanied with a syphilitic taint. One or two pills may be given morning and night.

ANTIMONY, TARTARIZED (*Tartar emetic*).—A diaphoretic, diuretic, expectorant, and emetic. Is employed more than all the other preparations of antimony taken together. Before the discovery of anæsthetics, it was often employed to produce relaxation of the muscles, preparatory to the reduction of fractures and dislocations, and of strangulated hernia (rupture).

In the beginning of acute inflammatory affections, like quinsy, pleurisy, pneumonia, etc., it may be used with great advantage.

After the first stage has passed, however, it is inadmissible on account of its tendency to produce prostration. For the purpose of quieting inflammatory fever, it may be administered in doses of one fourth or one half grain (.016-.033 gram) every two or three hours. As an expectorant, the dose is much smaller, one sixth or one eighth of a grain. As a constituent of the *compound syrup of squill*, or *hive syrup*, it is sometimes used in spasmodic croup, but the treatment with alum, ipecac, etc., is much to be preferred. Indeed, it is no uncommon thing for physicians to find young children dangerously prostrated from the effect of the careless use of hive syrup.

ANTIMONIAL WINE.—A solution of tartarized antimony, in sherry wine, in the proportion of thirty-two grains (2 grams) to the pint. It has no advantage over the solution in water alone, made as required.

AQUA FORTIS. See Acid, Nitric.

AQUA REGIA. See Acid, Nitro-Muriatic.

ARECA NUT (*Areca catechu*, *Betel nut*).—An astringent, chiefly used for the purpose of expelling *tapeworms*. Dose, two or three drachms (8-12 grams), powdered, mixed with syrup.

ARNICA (*Arnica montana*, *Leopard's bane*). Plate K.—A plant growing in the mountainous regions of Europe. The flowers alone are used in this country. Useful in cuts, bruises, and internal injuries. For external use, an infusion or decoction of half an ounce (16 grams), of the flowers in a pint (512 grams) of water, is the best preparation. For internal injuries, the tincture may be given in five or ten drop doses every two hours.

AROMATIC CONFECTION.—A pleasant carminative and stomachic, used to relieve flatulent *dyspepsia*. Dose: five to sixty grains (.333-4 grams).

AROMATIC SPIRIT OF AMMONIA. See Ammonia.

ARROW ROOT (*Maranta arundinacea*). Plate J.—Used as an article of diet for invalids. Prepared for use by mixing a tablespoonful with sufficient cold water to make a paste, and then adding it gradually to a pint of boiling milk.

ARSENIC (*Arsenious acid*).—This is medicine of such power that it ought not to be used except by the skilled physician. Even in the hands of physicians it can generally be advantageously replaced by the

ARSENICAL SOLUTION (*Fowler's solution*).—Although a poison of great power, it is a remedy of great value when properly used, and can be given with perfect safety. It is used in diseases of the skin, fever and ague, chronic rheumatism, diseases of the bones, neuralgia, epilepsy, and many other diseases of the constitution.

In malarial troubles, when quinine ceases to have the desired effect, Fowler's solution will often act most pleasantly, not only breaking up the periodicity of the disease, but also toning up the system generally. In certain forms of neuralgia its action is none the less strongly marked.

It will control the morning vomiting of persons addicted to drink. Of late it has been used with the happiest effect in the vomiting of pregnancy. Here the dose should be small, one or two drops three times daily. For general use, five drops is the proper dose to begin

with, cautiously increasing it to ten drops. It should always be given in at least a wineglass of water.

ASPARAGUS (*Asparagus officinalis*). Plate A.—Some suppose that asparagus possesses diuretic properties, but without any substantial reason.

ASSAFCETIDA (*Nartheex assafoetida*). Plate D.—The dried juice. A powerful, stimulating antispasmodic. Employed in the nervous diseases of females, in epilepsy, St. Vitus's dance, in the convulsions of infants, when dependent, especially, on flatulence; and indeed in almost every variety of spasmodic diseases. It is given in several forms. Dose: ten grains (.666 gram) or more, made into pills. It is often used as an injection in spasms. One or two drachms (8 grams), rubbed up with warm water into an emulsion, may be administered at once in this way. Assafoetida is frequently combined with other medicines.

ATROPINE (*Atropia*)—Comes from the root of belladonna; yellowish-white crystals.

ATROPIA, SULPHATE OF.—A white powder. Atropia and its sulphate have the same action on the system as belladonna; should not be used in greater quantities than $\frac{1}{30}$ of a grain (.002 gram); they are rarely used internally. A drop of the solution of the sulphate (two grains to one fluid-ounce) is often put into the eye by the surgeon, to dilate the pupil. See Belladonna.

AYENS (*Geum rivale*, *G. album*, *G. urbanum*).—The last named is a native of Europe; the others are common in the U. S. Used in chronic or passive hemorrhages, in whites, and in diarrhœa, in dyspepsia, and in the debility of consumption. Dose: of the powdered root, one scruple to one drachm (1.333–4 grams), three times a day. The decoction is made by boiling one ounce (32 grams) in a pint (512 grams) of water; and it is given in doses of one to two fluid-ounces (32–64 grams).

BALM (*Melissa officinalis*). Plate F.—Native of Europe, but naturalized in the U. S. Like many other plants of the mint family, it has an agreeable odor, but no decided medicinal properties. An infusion is a pleasant drink in fevers, and when taken warm promotes sweating.

BALM OF GILEAD.—The tree generally known by this name in this country is *Populus balsamifera*, var. *Candicans*. It is rare in the wild state, but common as a shade-tree about dwellings. The buds, in the spring, are covered with a resinous substance of an agreeable, balsamic odor, from which an ointment is prepared, useful in burns, bruises, etc. The inner bark of this, and other species of poplar, is said to be useful in gout and rheumatism.

BALMONEY (*Chelone glabra*, *Snake-head*).—A native plant, growing freely in wet places. The leaves are bitter and supposed to be tonic, and to have a special effect upon the liver. A decoction may be used in doses of one or two fluid-ounces (32–64 grams).

BALSAM OF PERU.—Used externally as a local stimulant for ulcers, etc.

BALSAM OF TOLU.—A stimulant expectorant. Used in cough mixtures, because of its agreeable flavor. Dose of tincture: half a drachm to one drachm (2–4 grams); dose of syrup: one drachm to half ounce (4–16 grams).

BANEERRY (*Actæa spicata*).—Virtues similar to those of *black cohosh*, which see.

BAPTISIA. See Wild Indigo.

BARBERRY (*Berberis vulgaris*). Plate C.—Native of Europe, but naturalized in the United States. The bark of the root is generally used. In small doses it is tonic; in large, cathartic.

BARLEY (*Hordeum*).—Used as food, and as a demulcent.

BARLEY WATER.—“Made by taking barley two ounces (64 grams), washing well, then boiling for a short time with half a pint (256 grams) of water, then throwing the liquid away, and finally boiling with four pints (2408 grams) of water to two pints (1024 grams.) Used as a drink in inflammatory and febrile conditions of the system. May be flavored with lemon-juice and sugar.

BASILICON OINTMENT.—Used as a dressing for indolent ulcers and sores, especially those produced by burns.

BAYBERRY (*Laurus nobilis*). Plate C.—Native of the tropics. The leaves and berries were formerly used for their stimulant, stomachic, and astringent properties. At present, seldom employed except in the form of oil as an external application for relieving rheumatic and other pains.

BAYBERRY (*Myrica cerifera*, *Wax-myrtle*).—A native shrub, grow along the sea coast and on the shores of the great lakes. Tonic, astringent, and alterative. Used in diarrhœa, dysentery, scrofula, etc. A decoction made with an ounce (32 grams) of the bark to a pint (512 grams) of water may be taken in doses of one or two fluid ounces (32–64 grams).

BAY RUM (*Myrica acris*).—Obtained by distilling rum with the bay leaves. Used as a perfume, and as an external application in headache, etc.

BEARBERRY (*Arctostaphylos uva-ursi*).—Tonic and astringent. Useful in chronic diseases of the bladder. Best given in decoction or fluid extract, a fluid-ounce (32 grams) of the former, a fluid-drachm (4 grams) or half a drachm (2 grams) of the latter.

BEECHDROP (*Epiphegus Virginiana*).—Astringent. Dried and powdered, it has been used to control diarrhœa.

BELLADONNA (*Atropa belladonna*, *Deadly night-shade*). Plate O.—A native of Europe, but growing freely under cultivation in this country. The fruit bears some resemblance to a cherry, being first green, then red, and ultimately deep purple. Another plant, *Solanum nigrum* (*Black night-shade*), is sometimes mistaken for it. This grows freely about buildings and waste places. Its berries are much smaller than those of belladonna, and quite black when ripe; and its flowers are white, while those of belladonna are of a dull, reddish color. Both root and leaves are used. Belladonna is a powerful narcotic, and in overdoses poisonous. Is applicable to a great variety of painful affections, as neuralgia, gout, rheumatism, headache, etc.; also convulsions, epilepsy, whooping cough. Externally, in the form of liniment or plaster, it is used for the relief of painful diseases of the heart and lame back, and to dry up the milk of nursing women. For this latter purpose the liniment is best, and if freely painted over the breasts every three or four hours will produce the desired effect in a short time. In many cases of nocturnal incontinence of urine of children belladonna acts most pleasantly.

It may be administered in *tincture* or *extract*. Of the former fifteen drops, and of the latter one eighth of a grain to a grain may be given (.008-.066 gram).

The active principle of belladonna is atropia. This is not used internally.

BENZOIN.—The dried juice of the *Stryax benzoin*, a tree growing in the East Indies. It is used chiefly in the form of *benzoic acid* and *compound tincture*. The acid is given for the purpose of diminishing the formation of uric acid.

The compound tincture is applied to the sore nipples of nursing women with great success. It is also an excellent application to fissure of the anus, and has been used, by injection, in piles. It is used also for the removal of freckles, and in various diseases of the skin.

Dose: benzoic or benzoic acid may be given in doses from five to thirty grains (.333-2 grams).

BETH ROOT (*Trillium erectum*, and *pendulum*, *Birth root*, *Wake robin*).—A family of North American plants with beautiful lily-like flowers, blooming late in spring. The root is the part used. Astringent and tonic. Used in bleeding from the lungs, kidneys, bladder, womb, etc. Also, by injection, in leucorrhœa.

The decoction may be given in doses of a wineglassful. A tincture made by macerating one part of the root in two of alcohol for two weeks, is given in doses of half a teaspoonful.

BIRCH BARK (*Betula alba*, *B. nigra*, and other species).—A decoction of the bark and young twigs is sometimes used as a remedy for *skin diseases*, *rheumatism*, *gout*, and affections of the *bladder*. The oil of birch is sometimes employed in *gonorrhœa*.

BISMUTH.—A metal, not used in its pure state. The *sub-nitrate* and *sub-carbonate* are the preparations generally employed, the former most frequently.

It is a very valuable remedy in most painful affections of the stomach; in cancer, chronic ulcers, and chronic inflammation of this organ the preparations of bismuth are very beneficial. In that form of dyspeptic trouble characterized by pain after eating, or by *water-brash*, there is no better remedy. In the diarrhœa and vomiting of both children and adults, bismuth is of great service.

It should be given in doses of from ten to thirty grains (.666-2 grams); and, since it is tasteless, it may be taken with water alone.

BITTER ORANGE-PEEL.—An aromatic tonic; used in the preparation of bitters and compound tinctures.

BITTER ROOT (*Apocynum cannabinum*, *Indian hemp*).—Two species of apocynum grow abundantly in this country: the one named above, and *A. androsemafolium* (*Dog's bane*). Both are used medicinally, but the first alone is worthy of notice. It is cathartic, emetic, diuretic, and diaphoretic. The root is the part used. It is employed mainly in *dropsy*, but is claimed to be useful in *intermittent* and *remittent fevers*, *jaundice*, etc.

The decoction is the most convenient mode of administering it. Boil half an ounce (16 grams) of the dried root in a pint and a half (768 grams) of water down to a pint (512 grams), and give two or three tablespoonfuls three or four times a day.

Care should be taken not to confound this *Indian hemp* with the *true Indian hemp*. See *Cannabis Sativa*.

BITTER-SWEET. Plate G.—Two plants, both quite common, are known by this name, and it is important not to confound them. The one referred to here is *Solanum Dulcamara*, and belongs to the *night-shade* family. It has a somewhat shrubby stem, scarcely climbing but inclining on any convenient support. Lower leaves somewhat *heart-shaped*, the upper *halberd-shaped*, with two ear-like lobes at the base. The flowers are blue or purple, and have a sweetish, sickening odor. The berries are red.

It is narcotic and alterative. Commonly used in cutaneous eruptions of the scaly kind. *Decoction*, in which form it is generally used, is made by boiling one ounce (32 grams) of the leaves and twigs in a pint and a half (768 grams) of water until there is left but a pint (512 grams) of fluid. Dose of this is two to four tablespoonfuls, three or four times a day.

The other *Bitter-sweet* is *celastrus scandens*, a woody climber, often running to the tops of trees thirty or forty feet high. Its leaves are ovate-oblong, finely serrate. Flowers small and inconspicuous. The fruit is round, orange-colored, splitting open at maturity, and showing the scarlet covering of the seeds: very ornamental in the autumn, and often collected for house decoration.

This has also been used in medicine, but has no great value.

BLACK ALDER (*Prinos verticillatus*).—Tonic and astringent. *Decoction* and tincture of the bark and berries used. Of no great value.

The *Alnus* family of shrubs is also known by the name *alder*. *Alnus incana*, and *alnus serrulata* are used in domestic practice with excellent effect. When persons in otherwise good health suffer from boils, nothing has better effect than tea made from alder bark. When possible, the bark should be procured fresh from the shrub, boiled for an hour or more with water sufficient to cover it, and then the liquid poured off or strained for use. Of this three or four cupfuls may be taken daily for several days in succession.

BLACKBERRY (*Rubus villosus*).—Tonic and astringent. Employed in chronic diarrhœa. Used generally in the form of a decoction, which is made by boiling one ounce (32 grams) of the root in a pint and a half (768 grams) of water down to a pint (512 grams). Dose: two ounces (64 grams), several times a day.

BLACK COHOSH (*Cimicifuga racemosa*, *Actaea racemosa*, *Black snake-root*).—This is one of the most valuable of our native plants. It has been used in acute rheumatism with great success; also in chronic rheumatism where there is enlargement and stiffness of the joints. Chorea, especially when of rheumatic origin, speedily yields to its influence. It is very useful in many uterine derangements, as suppression of menses, painful or excessive menstruation, etc. It hastens the expulsion of the afterbirth and prevents afterpains. In the nervous and hysterical affections of women it is also beneficial. A tincture, made in the proportion of four ounces (128 grams) of the root to a pint (512 grams) of dilute alcohol, may be given in doses of fifteen to thirty drops three or four times a day.

BLACK OAK BARK (*Quercus tinctoria*) and **WHITE OAK BARK** (*Quercus alba*) are powerfully astringent, but seldom used internally. A decoction of either may be usefully employed in cases of exhaust-

ing diseases, as a local application to prevent *bed sores*, its action being to tan or toughen the skin so that it sustains prolonged pressure better. It may be applied to the nipples of women before confinement, as a preparation for nursing, thus diminishing the liability to sore nipples.

BLACK ROOT. See Culver's Physic.

BLACK WILLOW (*Salix nigra*).—All our willows have an active principle called *salicine*, which is possessed of tonic and anti-periodic properties, but the *black willow* has it in the greatest proportion. *Salicine* will cure mild intermittents, though less readily than quinine. It may be given in doses of ten grains (.666 gram) three or four times daily. A decoction of the bark has the same effect, but it must be used very freely.

BLADDER-WRACK (*Fucus vesiculosus*, *Sea-weed*, *Rock-weed*).—This seaweed, which grows freely on rocks all along the coasts, has been recommended as a remedy in *scrofulous diseases*, and as a means of reducing *obesity*. It is, however, of doubtful utility. It may be given in decoction.

BLAZING-STAR (*Chamaelirium luteum*, Gray; *Helonias lutea*, Aiton).—This is a tonic which by some is supposed to have a special influence upon the generative organs. It improves the appetite and digestion, and is considered useful in *disordered menstruation*, whether the flow be too scanty or too profuse. It is also used as a *vermifuge*. The root is the part used, and it is best given in infusion. An impure resin, supposed to contain the active principles, called *helonin*, may be given in doses of three or four grains (.200-.266 gram.)

BLESSED THISTLE (*Cnicus benedictus*).—Infusion of the flowering tops is used in *dyspepsia*. In its action it somewhat resembles dandelion and calumba.

BLOOD ROOT (*Sanguinaria Canadensis*).—One of our earliest and most beautiful spring flowers. It is an acrid emetic, possessing narcotic powers. In very large doses it is poisonous and has produced death.

It is most generally employed in affections of the lungs, as an ingredient of cough mixtures, being an excellent expectorant. Dose: of the powdered root, two or three grains (.133-.200 gram), and of the tincture, made in the proportion of two ounces (64 grams) to the pint (512 grams) of alcohol, thirty drops four or five times a day.

BLUE FLAG (*Iris versicolor*).—A beautiful plant, growing in wet places. The root is emetic, cathartic, and diuretic; doubtless possesses other properties which have not been fully investigated. In certain forms of headache it gives great relief. In those which recur periodically, known as sick or nervous headaches, the effect is most marked. A tincture, made by macerating one part of the fresh root in two of alcohol, should be used in one or two drop doses every fifteen minutes, until nausea is produced, or the headache ceases.

BLUE MASS. See Mercury.

BLUE PILL. See Mercury.

BOLDO (*Peumus boldus*).—The tincture has been recommended in anaemia, general debility, and dyspepsia.

BONESET (*Eupatorium perfoliatum*, *Thoroughwort*).—There are several species of the eupatorium family, all of which possess properties nearly identical, being tonic and diaphoretic, and in large doses

emetic and cathartic. This plant is probably more used in domestic practice than any other. The decoction, taken cold, is an excellent tonic, stimulating the appetite and increasing digestion; taken warm, to the extent of producing vomiting or not, it is very useful in the beginning of colds. It may also be employed with excellent effect in intermittent and remittent fevers.

BORAGE (*Borago officinalis*).—A decoction of the leaves is sometimes used in *febrile* and *pulmonary affections*.

BORAX. See Soda, Borate of.

BROMIDE OF AMMONIUM.

BROMIDE OF CAMPHOR.

BROMIDE OF CALCIUM.

BROMIDE OF POTASSIUM.

BROMIDE OF LITHIUM.

BROMIDE OF SODIUM.

BROMIDE OF ZINC.

Though introduced but a few years ago, the bromides have attained a very great and well-merited popularity. They are used in many disordered conditions of the nervous system, as *epilepsy*, *hysteria*, *sleeplessness*, *delirium tremens*, *convulsions*, *whooping cough*, *headache*, the nervousness incident to the *change of life*, *spermatorrhœa*, etc., etc.

The bromide of potassium is more frequently employed than all the others put together. For general use it is probably the best, as it certainly is the cheapest. Next in value is the bromide of ammonium. In the treatment of epilepsy it is generally thought better to combine the bromides of potassium and ammonium than to give either separately. The doses are as follows, viz.:

Bromide of ammonium, ten to thirty grains (.662–2 grams).

“ camphor, two to five grains (.133–.333 gram).

“ calcium, twenty to thirty grains (1.333–2 grams).

“ potassium, ten to sixty grains (.666–4 grams).

“ lithium, five to ten grains (.333–.666 gram).

“ sodium, ten to thirty grains (.666–2 grams).

“ zinc, one half a grain to two grains.

BROMINE.—Used in *hospital gangrene*. A weak solution has been recommended as a local application in *diphtheria*.

BRYONY (*Bryonia dioica* and *B. alba*). Plate B.—Bryony root has been used as a medicine from very ancient times. It is a very active cathartic, producing watery stools, and may be substituted for jalap. It also has a diuretic action, and is thus rendered valuable in the treatment of dropsies, either partial, as those of the chest occurring in pleurisy, or those of a general character. In rheumatism and other inflammations of the joints, the drug also has some reputation.

For diuretic and purgative effect, an infusion of half an ounce (16 grams) of the dried root to a pint (512 grams) of boiling water may be given in the dose of a wineglassful every four hours.

For other purposes the tincture is more eligible.

Dose: three to ten drops.

BUCHU (*Barosma crinata* and other species). Natives of South Africa. Buchu has a peculiar action upon the urinary organs, and is used with success in a variety of urinary disorders. In chronic catarrh of the bladder, and in morbid irritation of the bladder and urethra, with painful urination, buchu is very beneficial. The painful and

frequent urination so common among women about the change of life, is greatly benefited by it. It is best given in infusion or fluid extract. Of the infusion, made in the proportion of one ounce (32 grams) of the leaves to a pint (512 grams) of boiling water, two or three tablespoonfuls may be taken three or four times daily. Many physicians like an infusion of buchu and bearberry (*uva ursi*) better than either alone. Dose of the fluid extract, half a drachm to a drachm (1-2 grams).

BUCKTHORN (*Rhamnus frangula*).—Buckthorn bark possesses cathartic properties resembling those of rhubarb, but its action is more severe. A decoction is sometimes used in *dropsy*. An ointment prepared from the fresh bark is sometimes used in the treatment of *itch*.

BUGLE-WEED (*Lycopus virginicus*, *Water horehound*).—This is a native of the United States, belonging to the *mint family*, and grows in wet places. It is necessary to be careful not to confound it with *Lycopus Europaeus*, a plant naturalized from Europe, closely resembling it, and growing in like localities. The American plant has an *obtusely* four-angled stem; *calyx teeth 4, ovate, blunted and pointless*. The European has a *sharply* four-angled stem: *calyx teeth 5, triangular-lanceolate, tapering to a very rigid, sharp point*. Bugle-weed is mildly narcotic and astringent. It has been employed with happiest effect in bleeding from the nose, lungs, stomach, bladder, and womb. The infusion, made in the proportion of an ounce (32 grams) to a pint (512 grams) of boiling water, may be given in doses of a wineglassful three or four times daily.

BURDOCK (*Lappa minor*). Plate B.—Diaphoretic and aperient. Used in serofulous, venereal, cutaneous, gouty, and urinary affections. The decoction is made by boiling two ounces (64 grams) of the root, seeds, or leaves in three pints (1536 grams) of water down to two (1024 grams). Dose: one pint (512 grams) daily.

BURGUNDY PITCH (*Abies excelsa*, *Norway spruce*).—The Norway spruce grows in the mountains of Northern Europe and Asia. The pitch is used in the preparation of plasters, used chiefly in chronic rheumatic pains and affections of the chest, where a gentle but long-continued stimulation of the skin is desired.

BUTTER OF CACAO (*Theobroma cacao*, *Cocoa butter*).—Used in the preparation of suppositories and ointments. It is an admirable application for *sore nipples*.

BUTTERFLY WEED. See Milkweed.

BUTTERNUT (*Juglans cinerea*).—The inner bark is mildly cathartic, suited to cases of habitual constipation. A strong decoction should be made, and used in quantities sufficient to produce the effect desired.

CAFFEINE, CAFFEINA, OR CAFFEIA.—This is the most important constituent of coffee, and its effects are, in the main, those of a decoction of coffee. It is much used in nervous diseases, as *spasmodic asthma*, *nervous headache*, etc. The dose is from half a grain to two or three grains (.033-.200 gram) given in powder mixed with sugar.

CALABAR BEAN (*Physostigma venenosum*).—This plant is a native of Africa, where the bean is said to be used as an ordeal: the persons suspected of crime being obliged to eat them until they vomit or die, the former being regarded as a proof of innocence, and the latter of guilt.

Calabar bean is used in diseases of the eye, to produce contraction

of the pupil, having an action directly the opposite of belladonna. Internally it has been very successfully employed in *titanus* (lockjaw). The success which has followed its use in this disease is probably greater than that of any other single remedy. It is usually employed in the form of an extract. Commencing dose: one tenth of a grain. It may be given every two hours, increasing the size of the dose until decided effect is produced. A poison of such power should only be used under the direction of a skilled physician.

CALAMINE. See Zinc.

CALAMUS (*Acorus calamus*, *Sweet-flag*).—The root is an aromatic tonic, useful in painful indigestion with formation of gas in the stomach and bowels. It may be given in substance in doses of a scruple to a drachm (1.333–4 grams), or in decoction in doses of a wineglassful.

CALCIUM, SULPHIDE OF.—An excellent remedy for *boils*, *carbuncles*, *abscesses*, *scrofulous affection of the glands*, etc. It should be given in small doses, one tenth to one half grain (.0066–.033 gram) every two or three hours, in solution or mixed with sugar of milk.

CALISAYA BARK. See Peruvian Bark.

CALOMEL. See Mercury, Mild Chloride of.

CALUMBA (*Cocculus palmatus*).—Calumba, or columbo, has been long in high esteem as a mild tonic and stomachic, having no astringent quality, and being but very slightly stimulant. When there is loss of appetite, flatulency, acidity, nausea, and the train of symptoms arising from a debilitated state of the stomach, calumba is of great use, and rests lightly on the most delicate stomach, without producing any excitement of the system; on this account, it is the tonic commonly used to strengthen the stomachs of consumptive patients. We may give it with advantage to relieve the acidity and sickness of stomach so common at the commencement of pregnancy; and also to children, for the purpose of allaying the vomiting and purging to which they are so subject when teething. Those who have lived long in tropical climates have generally weak stomachs, easily deranged by errors in diet, and are subject to occasional derangement of the biliary organs; in such cases, calumba will often be found more beneficial than anything else, by giving tone to the weakened stomach, and correcting the depraved or redundant secretion of bile. It is of the greatest service in the bilious disorders of warm climates. It is an excellent tonic in chronic diarrhœa and dysentery. In almost all cases of convalescence from acute diseases, and especially when other tonics from any reason disagree, calumba may be relied upon. The best way to give it is in infusion, made in the proportion of half an ounce (16 grams) of the root to a pint (512 grams) of water, of which the dose is a wineglassful. It is often better to combine with it aromatics, like ginger, orange-peel, and, if there be constipation, a small quantity of senna may be added. If it is desirable to keep the infusion for any length of time, it is necessary to add whisky or brandy to it. In this way very pleasant and valuable tonic *bitters* may be prepared.

CAMPHOR (*Camphora officinorum*).—The camphor tree is a native of the East Indies. There is much difference of opinion among physicians as to the medicinal action of camphor, some asserting that it possesses powers of the greatest value, while others almost ignore it in

their daily practice. It is certain, however, that camphor exerts a quieting effect upon the disordered nervous system, and is often extremely valuable in quieting the restlessness of patients suffering from fevers. When opium disagrees, camphor will often act most pleasantly. It is often valuable in nervous and hysterical affections of women. In many forms of diarrhœa it is of great service, and especially in the diarrhœas of children. As an external application, in the form of a liniment, it is often applied to bruises and sprains, but *arnica* is better.

Camphor should not be employed indiscriminately, since in overdoses it is capable of producing the most serious poisonous effects. It may be given in substance or tincture. In order to reduce it to a powder convenient for administration, it should be rubbed up with a few drops of alcohol. Dose of the powder : one to ten grains (.066-.666 gram) ; of the tincture, five drops to a fluid-drachm (.333-4 grams). A *water of camphor* is sometimes used, generally as a vehicle for other medicines.

CAMPHOR, BROMIDE OF. See Bromides.

CANADA BALSAM.—Obtained from the Balsam Fir (*Abies balsamea*). Sometimes used internally for the same purposes as spirits of turpentine. More frequently employed in the manufacture of ointments and plasters.

CANADA FLEABANE. See Fleabane.

CANADA PITCH. Obtained from the *Hemlock spruce* (*Abies Canadensis*), and in many sections of the country called *hemlock gum*. Used in the manufacture of plasters, as a substitute for *Burgundy pitch*.

CANELLA BARK.—From the *Canella alba*, a tree growing in the West Indies. An aromatic which is seldom used.

CANNABIS INDICA. See Indian Hemp.

CANTHARIDES. See Spanish Flies.

CAPSICUM. See Cayenne Pepper.

CARAWAY, SEEDS OF (*Carum carui*).—Native of Europe, but growing freely in this country. A pleasant aromatic and carminative. The seeds may be taken at will; the oil is given in doses of one to ten drops.

CARBAZOTIC ACID. See Acid, Picric.

CARDAMOM (*Elettaria cardamomum*). Plate O.—The plant which furnishes cardamom seeds is a native of tropical India. Owing to their aromatic and carminative properties, cardamoms are often useful in dyspeptic cases. They are frequently combined with purgatives to check flatulence and griping. Given in substance the dose is from five to twenty grains (.333-1.333 gram) ; in compound tincture, one-half to two teaspoonfuls.

CAROLINA PINK. See Pink Root.

CARROT (*Daucu carota*).—Carrot seeds, and the *root* of the wild plant—a weed altogether too common in some parts of the country—are moderately excitant and diuretic. Sometimes used in chronic kidney diseases and dropsy. Owing to their aromatic qualities the seeds are better suited to cases where the stomach is weak. They may be given in substance, in doses of thirty grains to a drachm (2-4 gram), or in infusion. The root of the garden carrot, properly prepared, makes a good poultice.

CASCARILLA BARK (*Croton eluteria*).—This country is supplied with cascarilla bark principally from the Bahama Islands. It is an excellent tonic and stomachic, without being astringent, and was much used before the discovery of quinine as a remedy in ague, particularly in cases in which the Peruvian bark could not be given without producing sickness at the stomach and purging. In simple indigestion, arising from weakness of the stomach, cascarilla is one of the best and most grateful tonics that can be administered; it is also very useful in checking purging when not caused by inflammation.

An agreeable sensation of warmth in the stomach is produced by this medicine, which never causes vomiting. Quinine has now, however, in a great measure, superseded the use of cascarilla, canella, and other tonic barks. Cascarilla, when burned, gives out an agreeable aromatic odor, and is on this account used as an ingredient in pastiles, and some people smoke a little of it along with tobacco. The dose of cascarilla, in powder, is from ten to thirty grains (.666–2 grams); and the dose of the infusion, which is the best method of using it, is from two to four tablespoonfuls. Take of cascarilla bark, bruised, an ounce and a half (48 grams); boiling water a pint (512 grams): macerate for two hours in a vessel lightly covered, and strain.

CASSIA PULP (*Cassia fistula*).—This is a mild and certain laxative in the dose of one or two drachms (4–8 grams).

CASTOR.—A substance obtained from the *beaver*. Stimulant and antispasmodic. Used in hysteria, epilepsy, and low fevers with nervous symptoms. Dose: ten to thirty grains (.666–2 grams). Seldom employed in this country.

CASTOR OIL (*Ricinus communis*). Plate G.—Our supply of castor oil formerly came from Europe, but of late the plant has been largely cultivated in this country, especially in Southern Illinois. So successful has the enterprise been, that the European article is now but little used.

It is unnecessary to describe an article so commonly known as this. When it is desired simply to overcome constipation, or to cure a diarrhœa dependent upon irritating substances in the bowels, castor oil is one of the best remedies to employ. In the beginning of diarrhœa, when there is a reasonable suspicion of its being caused by indigestible food, castor oil ought always to be given. If there be much griping it is well to give landanum or paregoric with it. In the forming stage of bronchitis or other acute diseases, castor oil exerts a beneficial influence by unloading the bowels, and reducing fever. It is sometimes used in lead colic, but the saline cathartics, especially Epsom salts, act better. There is no better laxative than this oil for children, and for females during pregnancy and after delivery. Various plans are adopted to cover its nauseous taste; some take it with warm milk, others prefer it floating in a little spirit. It is unwise, however, to put it in any article of diet, lest a disgust for that article be engendered. One of the best methods is to beat it up with the yolk of an egg, and then add gradually a little cinnamon or peppermint water, or a little plain water, with two teaspoonfuls of the tincture of cardamoms, to prevent sickness at the stomach. It may be given to very young children in the dose of half a teaspoonful to two or more teaspoonfuls, according to the age. For a grown-up person the dose is one, two, or three tablespoonfuls.

CATECHU (*Acacia catechu*).—Catechu is produced from a species of acacia which grows in various parts of India. It is an excellent and very powerful astringent, and is frequently used in combination with chalk mixture and laudanum for the purpose of stopping purging when there are no inflammatory symptoms present. It is given to check gleet, whites, discharges of blood from the bowels and womb, and all immoderate discharges when not attended with inflammation. The dose of the powder is from ten grains to a drachm (.666–4 grams). It may also be applied locally to stop bleeding from the nose and gums, and as a gargle in relaxed conditions of the throat without inflammation. In solution it is also useful in ulcerated nipples and other ulcers after the acute stage has passed.

CATNEP (*Nepeta cataria*, *Catmint*).—Stimulant and slightly tonic. Used mainly in the flatulent colic of infants. It may be given in infusion, sweetened, in quantities sufficient to produce the desired effect. The common practice of giving it without stint, simply because an infant cries, cannot be too strongly condemned.

CAUSTIC POTASH. See Potash.

CAYENNE PEPPER (*Capsicum fastigiatum*, and several other species). Plate B.—Cayenne pepper is more used as a condiment than as a medicine; it promotes digestion and prevents flatulence. The natives of warm climates, who live principally on vegetable food, mix with it a large quantity of capsicum, to promote digestion and give tone to the stomach; and this diet appears much better suited for those climates than the rich and stimulating dishes of animal food, with wine and spirituous liquors, on which Europeans generally live. The former kind of aliment appears intended by nature for the inhabitants of hot climates, since, without being either too exciting or irritating, it allows them to resist the action of *malaria*, or the effluvia from decaying vegetable and animal matter; and to avoid the fevers, dysentery, and other inflammatory diseases which cause the death of so many, in consequence of their indulging in the latter mode of living, which disposes to those diseases, and also renders them more frequently fatal than they otherwise would be.

Capsicum is at present extensively cultivated in Europe and the United States, and as it is now understood to possess all the virtues of that grown in tropical regions, has in a great measure superseded the use of the latter. In fact there is at present no other stimulating vegetable substance so much in use in the seasoning of food as this; it is extensively used in the preparation of pickles; and vinegar which has acquired a sufficient degree of pungency from the pods of the bird-pepper (Chili vinegar), is considered the most wholesome and one of the most agreeable things that can be used with all kinds of fish.

It is of value in some cases of dyspepsia. Taken freely it sometimes cures piles. In obstinate cases of chills and fever, it materially adds to the efficiency of quinine. In common with other stimulating medicines of like nature, it sometimes cures sea-sickness. In delirium tremens, when the stomach is irritable and will retain nothing, capsicum in large doses will often do great good. From a drachm to two drachms (2–4 grams) of the tincture of capsicum, with half a pint (256 grams) of water, form an excellent gargle for malignant sore throat, and also for sore throat with relaxation of the palate. It is a

valuable addition to diarrhœa mixtures, when there is much colic pain. Capsicum is sometimes used externally in the same manner and for the same purposes as mustard; it has the advantage of not blistering the skin. The dose of the powder is from six to ten grains (.400–.666 gram), made up in pills; and that of the tincture is from ten drops to a drachm, in barley-water. The tincture is prepared thus: Take of capsicum, bruised, five drachms (20 grams); proof spirit, a pint (512 grams): macerate for fourteen days, and strain.

CEDAR APPLE. See *Juniperus Virginiana*.

CELANDINE (*Chelidonium majus*).—The fresh juice is sometimes used as a purgative in *jaundice, dropsy, intermittent fever, and scrofula*. The dose is from thirty to forty drops. The infusion may also be used.

CENTAURY, AMERICAN (*Sabbatia angularis*). Plate F.—This beautiful plant grows freely in most of the United States east of the Mississippi. All parts of it are bitter. Its cold infusion is useful in debilitated conditions of the stomach, and has been used with success as a tonic in fevers; and the infusion taken warm is used as a diaphoretic in febrile conditions generally. Dose: of the infusion made in the proportion of an ounce (32 grams) to a pint (512 grams) of boiling water, two to six fluid ounces (64–192 grams).

CERIUM, OXALATE OF.—Used chiefly to relieve the *vomiting of pregnancy*, though it has been found useful in vomiting from other causes. Dose: One to three grains (.056–.2 gram) three times a day, given in pill or powder. It often acts like magic as a remedy for sick headache, to be taken dry on the tongue.

CHALK, PREPARED.—Chalk is principally employed in medicine for the purpose of checking purging, from acidity in the stomach and bowels. It is mild in its action, and well suited for children. The dose of prepared chalk in powder is from fifteen to thirty grains, but it is usually given in the form of the chalk mixture. Take of prepared chalk, half an ounce (16 grams); sugar, three drachms (12 grams); mucilage of gum arabic, an ounce and a half (48 grams); cinnamon-water, eighteen fluid ounces (576 grams); mix. The dose is from two to four tablespoonfuls every three or four hours. The compound powder of chalk is used for the same purpose, and is prepared as follows: Take of prepared chalk a quarter of a pound (96 grams); cinnamon, two ounces (64 grams); tormentil and gum arabic, of each an ounce and a half (48 grams); long pepper, a quarter of an ounce (8 grams); rub them separately to a very fine powder, then mix them. Dose from five to thirty grains (.333–2 grams). The utility of these preparations of chalk is increased by giving along with them a little laudanum, catechu, or kino.

CHAMOMILE FLOWERS (*Anthemis nobilis*). Plate F.—Chamomile is an excellent stomachic and tonic, and is one of the best popular remedies in common use. Those who suffer from heartburn, flatulency, loss of appetite, and other symptoms of indigestion, may find much benefit from cold chamomile tea, with a little powdered ginger, taken early in the morning. The cold infusion, which is the best and most agreeable way of using it as a tonic, is made with half an ounce (16 grams) of the flowers to a pint (512 grams) of cold water. If the warm infusion be preferred, care should be taken in preparing it not

to allow the flowers to remain with the water longer than ten minutes. When there is nausea in consequence of the stomach being overcharged with food, a strong infusion of chamomile taken warm acts as an emetic; and it is often given to assist the action of other emetics. The flowers steeped in hot water and wrapped in flannel retain the heat a long time, and are therefore very useful as a fomentation. The extract of chamomile is serviceable as a tonic, in doses of from eight to sixteen grains (.533-1.066 gram); it is usually combined with a little myrrh and a preparation of iron.

CHARCOAL (*Carbo ligni*).—Wood-charcoal, in fine powder, taken into the stomach, absorbs the gases contained in that organ. Hence it is a remedy of great value in that form of dyspepsia characterized by flatulence. It should be taken in doses of one or two teaspoonfuls; externally it is applied, mixed with flaxseed poultices, to foul and gangrenous odors to correct fetor. Foul water may be rendered safe and fit for drinking by filtering through charcoal.

CHECKERBERRY. See Gaultheria.

CHERRY BARK. See Wild Cherry.

CHESTNUT LEAVES (*Castanea vesca*).—An infusion of the leaves has been highly recommended in *whooping-cough*. It must be given very freely; a fluid extract is prepared, of which the dose is half a teaspoonful to a teaspoonful every three or four hours.

CHICORY (*Cichorium intybus*). Plate B.—Used medicinally in atonic *dyspepsia*, where it is supposed to exert about the same influence as *dandelion*. Used fraudulently to adulterate coffee.

CINCHONINE. See Cinchona.

CHLORAL, HYDRATE OF.—This valuable medicine was introduced only a few years ago, but soon acquired great popularity. Like opium, it quiets pain and produces sleep, but is not attended by any of the unpleasant after-effects of that drug. At first it was believed to be transformed into chloroform in the blood, and it was supposed to exert the same influence as chloroform inhalation, but this has been disproved. Though less violently active than either opium or chloroform, when given in safer doses, it is still better than either of them in certain cases. In very many cases of simple sleeplessness no other medicine can compare with chloral. A small dose taken just as one is retiring will sometimes induce sleep before the head fairly touches the pillow. Hence, when a person is sleepless from mere nervousness, from care and anxiety, or from pain of no very violent character, chloral may be given with almost absolute certainty of relief. It is sometimes employed in large doses to produce insensibility to the pain of minor surgical operations, but is not to be recommended. Ether is much more manageable, and less dangerous than very large doses of chloral. In almost all cases of convulsions occurring in children, chloral is of inestimable value. So soon after the onset of convulsions as it is possible for the patient to swallow, the administration of chloral should be commenced, and repeated at intervals of fifteen minutes until natural sleep, free of all convulsive movement, is induced. In the convulsions of pregnant women, and of women soon after delivery, chloral is also one of our best remedies. By bringing the system fully under its influence, we check the convulsions, at least temporarily, and gain time to remove the cause which has produced them.

Delirium tremens is another disease which often yields to chloral when other remedies fail. It has also been used with benefit in *tetanus* (lockjaw), whooping-cough, asthma, chorea, and many other diseases of the nervous system.

It is often combined with *bromide of potassium*. When given alone, the dose for an adult is from ten to thirty grains (.666–2 grams); for a child, one grain (.066 gram) for each year of its age. It should be given in a little water, sweetened or flavored.

CHLORATE OF POTASH. See Potash.

CHLOROFORM.—Chloroform was formerly used internally, but it has been superseded by chloral. For its use by inhalation, see the article on *Anæsthesia*, page 483.

CHLORODYNE.—An anodyne mixture containing chloroform, ether, morphia, etc. Formerly much used to relieve pain, and to check diarrhœa, etc. Dose: five or ten drops. See Narcotics, page 211.

CHRISTMAS ROSE. See Hellebore, Black.

CHROMIC ACID. See Acid, Chromic.

CINCHONA BARK (*Cinchona flava*, *C. pallida*, *C. rubra*, *Peruvian Bark*, *Calisaya Bark*). Plate E.—The different species of cinchona above named possess essentially the same properties. In former times, the bark was given in substance, but this practice became obsolete with the discovery of the alkaloids to which it owes its medicinal effects. Chief among these is *quinine*, but *cinchonina* and *cinchonidia* are, for many purposes, scarcely less valuable.

These alkaloids, from their difficult solution in water, are always used in combination with an acid, generally sulphuric, forming the sulphate of quinine, sulphate of cinchonina, and sulphate of cinchonidia.

As is well known by almost every one, quinine is one of the best, if not the very best, of all vegetable tonics. Among vegetable tonics, it occupies a place corresponding to that of iron among minerals. But it has another property which is scarcely less valuable—that of controlling *intermittent fevers*. No other remedy ever discovered compares with it for this purpose. It has the power, moreover, of reducing the temperature of acute diseases when dangerously high, and has been largely used for this purpose during the past few years.

Many persons have an ignorant prejudice against quinine, believing that, when taken for a length of time, it leaves unpleasant after-effects which cannot be removed. It is scarcely necessary to refute their assertions, and to state that their prejudice is without substantial foundation. A person fully under the influence of quinine may feel a buzzing or roaring in the ears, or possibly be slightly deaf, but these effects soon pass away spontaneously.

Quinine as a tonic is applicable to so many different states and conditions that no attempt will be made to particularize other than in a very general way.

In nearly every acute disease tending toward prostration of the system, quinine may be used with advantage. In *pneumonia*, *pleurisy*, all the *fevers*, *diphtheria*, *rheumatism*, *erysipelas*, *dysentery*, etc., etc., quinine is one of the most reliable agents in supporting the patient. In many of these diseases, moreover, it may be used to lower a threatening temperature of the body. What has been said of quinine applies, in a great measure, to the other alkaloids. Physicians of

large experience esteem the latter almost as highly as the former. In the treatment of intermittent fever they require to be given in rather larger doses than quinine, when their effect will be found almost, if not quite, as beneficial.

The dose of quinine, and the other alkaloids as well, must depend upon the effect desired. As a tonic, one to three grains (.100-.133 gram) may be given every three or six hours. As an antiperiodic in intermittent fever, or neuralgia of a periodical type, the ordinary dose is about five or ten grains (.333-.666 gram) three or four times a day, one of the doses being taken an hour before the anticipated chill or paroxysm. To lower a high temperature, larger doses are required, ten to twenty grains (.666-1.333 gram). It may be well to state that this lowering of the temperature is not permanent, and may often be accomplished quite as well, if not better, by cold water. The alkaloids may be given in solution, pill, or powder. Two other preparations of bark may be mentioned—the tincture and compound tincture. Either of these may be used as a simple bitter tonic, or as a vehicle for other medicines. The dose is one or two teaspoonfuls.

CINNAMON (*Cinnamomum aromaticum* and other species). Plate B.—Cinnamon is a medicine seldom given alone, but is much used on account of its aromatic and stimulant properties as an auxiliary to other remedies. Medicines for disorders not of an inflammatory nature are frequently given in cinnamon-water, which, to a certain extent, covers their disagreeable taste and flavor, and tends to prevent sickness at the stomach. The best vehicle for the administration of prepared chalk, in cases of simple *diarrhoea*, is cinnamon-water.

The oil of cinnamon, in doses of three or four drops, on sugar, is sometimes given to relieve spasms of the stomach and flatulent colic.

CITRATE OF POTASH. See Potash.

CITRIC ACID. See Acid, Citric.

CITRINE OINTMENT.—Citrine ointment, which is made with lard and the nitrate of mercury, is used in chronic ophthalmia, specks, and ulceration of the front of the eye. When reduced in strength by an equal quantity of olive oil or lard, it is a very efficacious remedy for old sores, scald-head, and various diseases of the skin, especially those of a syphilitic origin. Citrine ointment, when properly prepared, is of a golden yellow color.

CLOVES (*Caryophyllus aromaticus*). Plate D.—Aromatic stimulant, used to relieve *colic* and to expel *flatus*. An infusion of two or three drachms (8-12 grams) in a pint (512 grams) of boiling water, may be given in the dose of a wineglassful. The oil is often used locally to relieve *toothache* and *earache*.

COCA LEAVES (*Erythroxylon coca*). A shrub growing in South America. The leaves are chewed by the natives with the effect of enabling them to withstand hunger and endure fatigue. The effects seem to be analogous to those of tea and coffee. The value of coca as a remedy has not been fully determined.

COCCULUS INDICUS (*Anamirta cocculus*).—The fruit of *cocculus* is often used for catching fish by mixing it, bruised, with dough, and scattering the mixture upon the water. After eating it the fish come to the surface and float motionless.

The saturated tincture has been used in *paralysis*, *epilepsy* and

chorea. The dose to begin with is two drops twice a day, which may be gradually increased to thirty.

COCOA BUTTER. See Butter of Cacao.

COD-LIVER OIL (*Oleum morrhue*).—This is obtained from the livers of the common cod-fish. There are different varieties, dependent upon the mode of extraction, known as *pale*, *light brown*, and *dark brown*. Of these the first named is the purest and most palatable. The dark brown is extracted from livers which have been allowed to undergo putrefaction to some extent; it has a very disagreeable taste and smell. Though long used for some diseases, cod-liver oil was not brought prominently before the public until about forty years ago. Since then it has enjoyed great popularity as a remedy in *consumption* and other constitutional diseases of an exhausting nature. Though used as a *remedy*, it might perhaps be more properly termed a *food*. In almost all chronic, wasting diseases, cod-liver oil is beneficial, if the stomach will but retain and digest it. Its power of producing fat is well known. In the later stages of consumption, even when there is no longer any possibility of cure, cod-liver oil will sometimes fatten the poor patient to a marked extent. In this disease, and also in the *chronic bronchitis* of the aged, cod-liver oil exerts a controlling influence upon the cough, night-sweats, and other distressing symptoms. In scrofulous diseases generally, *hip-joint diseases*, *white swelling of the knee*, *caries of the spine*, *lumbar and psoas abscesses*, *rickets*, etc., cod-liver oil will nearly always do good. It is also given in *skin diseases*, certain forms of *eye troubles*, and *syphilis*. Young children who have suffered from diarrhoea in summer, and who seem reduced too low to be able to assimilate the food given them, may often be saved by rubbing cod-liver oil into the skin. The same plan of treatment is applicable to the cases of children greatly reduced by bronchitis.

The dose of cod-liver oil is from one to two tablespoonfuls, three times daily. Many persons take it alone, while others are only able to swallow it in milk, the froth of beer, or with whiskey or brandy.

There are upon the market many emulsions of this oil, pleasantly flavored with aromatics; also mixtures of the oil with other medicines, but these preparations ought generally to be regarded with disfavor. Though some of them are unquestionably valuable, others are not what they are represented to be. It is generally better, therefore, to procure the pure oil.

COFFEE (*Coffea Arabica*). Plate O.—Strong coffee is often used in *opium poisoning*. It should be made very strong and given in large quantities.

Caffeina, one of the most important constituents of coffee, is used with great success in some cases of *nervous headache*. Dose: one quarter of a grain to two grains (.016–.133 gram).

COLCHICUM (*Colchicum autumnale*, *Meadow Saffron*).—Native of Europe, but often cultivated in this country for the beauty of its flowers, which resemble those of the crocus. The seeds and tuber are used. Colchicum is one of the best remedies known for *gout*, and is often of great value in the treatment of rheumatism. In large doses it is emetic and cathartic. In employing it in the diseases above named, care should be taken not to disturb the stomach and bowels; it should be given just short of producing this effect.

It is generally given in the form of *wine* or *tincture*. The commencing dose of the wine of the *root* is ten drops; of the *seed*, about thirty; and of the *tincture*, ten drops. The dose may be repeated every three hours, and increased until the desired effect is produced.

COLD POWDER. See page 561.

COLLINSONIA. See Horse-balm.

COLLODION.—A solution of gun-cotton in ether and alcohol. Used to protect wounds, burns, and raw surfaces from the air. It should be applied with a camel's-hair brush, painting the surface over and over again, until a sufficiently thick coating is produced.

COLOCYNTH (*Citrullus colocynthis*, *Bitter Cucumber*, *bitter apple*). Plate C.—Originally from Asia, but now growing in Europe. The dried fruit, which is the only part of it used in medicine, is imported from the Levant. Colocynth is seldom used alone, on account of its violent purgative action; the preparation of it in common use is the *Compound Extract of Colocynth*, which is composed of the spirituous extract of colocynth, aloes, scammony, cardamom seeds, and castile soap. This compound acts chiefly on the large intestines, and is one of the best purgatives we possess. It is very generally employed to keep the bowels regular, and enters into the composition of nearly all the purgative pills used for that purpose. The dose is one, two or three pills, containing each five grains.

COLTSFOOT (*Tussilago farfara*). Plate G.—Native of Europe, but thoroughly naturalized in the United States. Used in *chronic bronchitis* as a demulcent and expectorant. Generally given in infusion made in the proportion of an ounce (32 grams) of the dried leaves to a pint (512 grams) of boiling water. Dose: a cupful often repeated.

COLUMBO. See Calumba.

COMPOUND SPIRIT OF ETHER (*Hoffmann's Anodyne*).—Stimulant, antispasmodic and anodyne. Very useful in *hysterical paroxysms*. In such paroxysms occurring about the menstrual period, and frequently induced by mental emotion, as grief, anger, mirth, etc., Hoffmann's anodyne given freely will generally induce quietude in a very short time. Dose: one half to one fluid drachm (2–4 grams) in a wineglass of water. It may be repeated every half hour or hour until the desired effect is produced.

COPAIVA (*Copaifera multijuga*, and other species of *Copaiba*). Plate N.—The balsam of copaiva is obtained from trees growing in the West Indies and South America. Though formerly used in diseases of the mucous membranes of the air-passages and bowels, its use at present is almost entirely restricted to gonorrhœa, and other disorders of the urinary organs. The dose of copaiva when taken alone is from ten to thirty drops; it may be given on a lump of sugar, or mixed with mucilage. It is more frequently administered in capsules, or in mixture with other medicines. See Gonorrhœa.

COPPER, SULPHATE OF (*Blue Vitriol*).—This is the only preparation of copper used in medicine to any extent. Even this is not much used internally. In small doses it is tonic and astringent; in large, violently emetic. It is sometimes used as an emetic in true croup, but is not to be recommended for this purpose on account of its violent action and prostrating effect. A solution of the salt, containing one or two grains (.066–.133 gram) to the fluid ounce of water, is sometimes used as an injection in gleet and leucorrhœa, and in chronic

diarrhœa and dysentery. The pure crystals are often touched upon ulcers, to stimulate them, and are also applied in the same manner to granular eye-lids. Dose: as an emetic, two to ten grains, (.133-.666 gram), dissolved in half a glass of water, repeated in ten or fifteen minutes if necessary.

COPPERAS. See Iron, Sulphate of.

CORAL ROOT (*Corallorhiza odontorhiza*).—This is said to be an active diaphoretic, useful in fevers and acute inflammations. Dose: of the powder, half a drachm (2 grams), every two hours.

CORIANDER (*Coriandrum sativum*). Plate L.—An aromatic stimulant used in cooking to promote the digestion of certain articles of food, and in medicine to correct the action of purgatives like rhubarb, senna and jalap.

CORROSIVE SUBLIMATE. See Mercury, Corrosive Chloride of.

COSMOLINE. See Petroleum.

COTO.—The bark of an undetermined tree, native of Bolivia. Used in diarrhœa. Dose: one half a grain to eight grains.

COTOIN.—The active principle of the above bark. Dose: one tenth to one half a grain.

COTTON (various species of *Gossypium*).—One of the best of all applications to burns, blisters and wounds. It effectually protects the surface from the air. Wounds will often heal in a surprisingly short time, if well dressed with cotton. Of course, it is most applicable to injuries not resulting in a great amount of discharge.

COUCHGRASS (*Triticum repens*).—A decoction of couchgrass root is a common drink in European hospitals. It is believed to be *diaphoretic* and *diuretic*.

COW-ITCH (*Mucuna pruriens*, *Cowhage*).—A plant growing in the East and West Indies. Hairs covering the pods are used. Formerly used as a vermifuge, but other and better remedies have superseded it.

COW-PARSNIP. See Masterwort.

CRANESBILL (*Geranium maculatum*, *Spotted Geranium*). Plate G.—This is a very common plant in rich woods, having beautiful light purple flowers, which appear in April and May. Later in the season its leaves become variegated with whitish spots, whence the name spotted geranium.

The root is a pure astringent, and may be used as an excellent substitute for catechu and kino in the treatment of diarrhœa, and relaxed conditions of the throat, vagina and rectum, and to restrain bleeding. A decoction may be employed, made by boiling an ounce (32 grams) of the root in a pint and a half (786 grams) of water, down to a pint. Dose: two or three tablespoonfuls. A tincture may be made by macerating one part of the fresh root in two of dilute alcohol for two weeks, and filtering. Dose: one half to one fluid drachm. (2-4 grams.)

CREAM OF TARTAR. See Potash, Bitartrate of.

CREASOTE.—Obtained by the destructive distillation of wood. Used internally to check vomiting, which it will sometimes do when other remedies have failed. The distressing vomiting of *sea-sickness* and *cholera infantum* frequently yield to its influence. Dose: one or two drops. Best given in water acidulated with acetic acid, to which sugar or syrup may be added. *In an overdose it is a violent poison.*

It is frequently applied to the cavities of decayed teeth to ease

toothache. Care should be taken in thus employing it, not to bring it into contact with the mucous membrane of the mouth, since it cauterizes, when not diluted.

CROTON OIL (*Croton tiglium*). Plate I.—The tree from the seeds of which croton oil is procured grows in Ceylon, the Malabar coast, China, and the neighboring countries. This oil is a powerful purgative in the dose of one or two drops, either made into a pill, with crumbs of bread, or taken in a little castor oil; and two or three drops rubbed on the tongue act with equal certainty; hence its value in apoplexy attended with difficulty in swallowing, mania, tetanus (*lockjaw*), and in other diseases where remedies in more bulky doses could not be easily administered. When apoplexy is threatened, the prompt and powerfully revulsive action of this remedy may be the means of warding off the impending danger; and it has often been known to give relief in cases of obstinate costiveness and colic when other means had failed. It has been used with advantage to assist the action of other remedies in expelling tapeworm.

Croton oil rubbed upon the skin produces, in a few hours, an eruption of small pustules, and when used in this manner is in some cases preferable to the tartar emetic ointment as a counter-irritant. Not more than from six to ten drops should be applied at once.

CUBEBS (*Cubeba officinalis*). Plate F.—Native of East Indies. Cubebs are chiefly employed in inflammations of the urinary passages, such as *gonorrhœa*, irritability and inflammation of the bladder, and vagina. The medicine is also used in chronic bronchitis, catarrh, and in certain troubles of the throat. Dose of the powder: ten grains to a drachm (.66–4 grains), or even more. See *Gonorrhœa*.

CUCUMBER TREE. See *Magnolia*.

CULVER'S PHYSIC (*Veronica Virginica*, *Leptandra Virginica*, *Culver's Root*, *Black Root*).—The fresh root of this plant acts as an emetic and cathartic, and, by some, is supposed to have a special effect upon the liver. It is sometimes used instead of mercurials in hepatic troubles. The root deteriorates in drying, and on this account it is better to use it fresh for both decoction and tincture. Half an ounce (16 grams) may be boiled in a pint of water (512 grains), and one or two tablespoonfuls be given at a dose. The tincture is made by macerating one part of the root in two parts of dilute alcohol for two weeks. Dose: half a fluid drachm (2 grams). An impure resin is prepared, called *leptandrin*. Dose: two to four grains (.133–.266 gram).

CUNDURANGO.—This is the bark of an undescribed South American shrub, which was introduced a few years ago as a cure for *cancer*. It has been found absolutely worthless in this and every other disease.

CURARE (*Woorara*).—South American arrow poison. Its exact composition is unknown except to the Indians who prepare it.

It is a very powerful and very dangerous remedy. It has been successfully used in *tetanus*.

CYPRIPEDIUM. See *Ladies' Slipper*.

DAMIANA (*Turnera microphylla*).—This has been widely advertised as a remedy for *sexual impotence* or *indifference* in either sex. The value of this remedy has not yet been fully tested.

DANDELION (*Taraxacum dens-leonis*). Plate D.—This plant has long been used in *dyspepsia* associated with congestion of the liver. A decoction of the fresh leaves and root, the expressed juice, a tincture,

an extract and a fluid extract, are the different preparations used. Of these the fluid extract is probably the best. It may be given in doses of one or two fluid drachms (4-8 grams). Sometimes used as vehicle for the administration of quinine.

DECOCTIONS.—These are made by boiling vegetable substances in water. This should be done in a *covered* vessel. The average proportion is about one ounce (32 grams) of the vegetable substance to one pint (512 grams) of water. The difference between infusions and decoctions is that the former are made by pouring boiling water on the substance and allowing it to stand until it cools, and the latter by actually boiling the substance.

DEWBERRY ROOT (*Rubus canadensis*, *Low or Running Blackberry*). See Blackberry. The virtues of this are the same.

DIGITALIS (*Digitalis purpurea*, *Fox-glove*). Plate E.—Native of Europe, but often cultivated in gardens for the beauty of its flowers. Digitalis is a diuretic and a tonic which exerts its influence upon the heart especially. It is used in very many diseases, but more particularly in those characterized by weakness of the heart's action. Its diuretic action is sought mainly in dropsy dependent upon disease of the heart and kidneys. When in valvular disease of the heart, the pulse beats rapidly, without much force, breath short, and there is general dropsy, digitalis will often do much good. In the dropsy which so often follows scarlet fever, digitalis also acts most beneficially. Large doses of the tincture, one to four fluid-drachms, have been successfully employed in *delirium tremens*. For general use the infusion is the best preparation. This is made in the proportion of one drachm (4 grams) of the leaves to a half pint (256 grams) of boiling water, and may be given in doses of one or two teaspoonfuls three times a day.

DOGWOOD (*Cornus florida*, *C. circinata*, and *C. sericea*). Plate A.—Other species of dogwood are natives of this country, but the three above named are those usually used in medicine. The first, *C. florida*, or *flowering dogwood*, is a tree sometimes thirty feet in height, and when in bloom, is one of the most striking and beautiful of the American forest.

Dogwood bark is a bitter tonic, with astringent and slightly stimulant properties. It may be usefully employed in intermittent and remittent fevers, especially during the stages of convalescence. It is also serviceable in debility of the stomach.

It is best given in decoction. An ounce (32 grams) of the bark boiled in a little more than a pint (512 grams) of water down to a pint, may be given in doses of one or two fluid-ounces (32-64 grams.)

DOVER'S POWDER.—Dover's powder is composed of one grain (.066 gram) of opium, one grain (.066 gram) of ipecac, and eight grains (.335 gram) of the sulphate of potash. This celebrated powder was introduced by Dr. Dover, a physician of considerable reputation in the reign of George II., and was long in general use before it received a place in the Pharmacopœia. Opium alone, in some inflammatory diseases, would do mischief; whereas, when given in this combination, in cases where sweating is indicated, it often produces the very best effects. The patient should remain in bed while under the influence of this remedy, and as soon as perspiration begins to break out he ought to drink freely of barley-water, toast-water flavored with

lemon-peel, or any other mild beverage, not acidulated, in order to keep up the discharge from the skin.

Dover's powder is now much used to calm the nerves, to produce sleep, and especially to open the skin after catching cold. For the latter purpose it should be taken as early as possible after exposure, and just before retiring. (See Cold Powder, page 561.)

DUBOISIA (*Duboisia mysporoides*).—A shrub growing in Australia. Its alkaloid, called *duboisia*, or *duboisina*, acts much like *atropia*. Dose: $\frac{1}{120}$ — $\frac{1}{60}$ of a grain.

DULCAMARA. See Bitter-Sweet.

ELATERIUM (*Ecbalium agreste*, *Squirting cucumber*, *Wild cucumber*).—Native of southern Europe. Elaterium is prepared from the juice of the fruit. It is a very active cathartic, producing watery stools. Often used in *dropsy*. It is very variable in quality, and should be used with care. Dose: $\frac{1}{16}$ to $\frac{1}{8}$ gr. (.004–.008 gram) in pill, with extract of henbane or gentian, every hour until it operates on the bowels. *Elaterin*, the active principle, is used in nearly the same doses, but should be dissolved in alcohol.

ELDER-BERRIES AND BARK (*Sambucus canadensis*).—Two species of elder grow in this country, the one bearing black, the other red berries; the former is the one meant. Elder-berries are aperient and diuretic; sometimes used for food—by those who like them. The inner bark and the root possess purgative properties. A strong decoction may be given in half-cupful doses.

ELECAMPANE (*Inula Helenium*). Plate E.—Native of Europe, but naturalized here. Useful in *chronic bronchitis*, *dyspepsia*, and in some diseases of the skin. Decoction of the root, one half ounce (16 grams) to a pint of water, may be given in doses of two to four tablespoonfuls.

ELIXIR VITRIOL. See Acid, Sulphuric Aromatic.

EPSOM SALT. See Magnesia, Sulphate of.

ERGOT OF RYE (*Spurred rye*).—This substance is principally used during labor, in order to assist in expelling the child; and there can be no doubt that it exerts a strong influence over the womb when given in suitable doses, and in the cases in which its use is indicated; under other circumstances it would produce the very worst effects, and is only, therefore, of value in the hands of a physician of experience.

The ergot of rye is now well ascertained to be one of the most efficacious remedies in arresting the alarming discharges of blood from the womb commonly called *floodings*, especially those occurring immediately after delivery; also in checking excessive menstruation, in gonorrhœa, the whites, and in all mucous discharges. But its most certain property is the power which it possesses of causing the womb to contract, and thereby expelling the child, and also the afterbirth, in cases where it has been too long retained.

In cases of labor, ergot should not be administered when there is any *mechanical impediment* to delivery. The mouth of the womb should be well dilated, and it should be ascertained that there exists no deformity of the mother, and that the child's head is not disproportionately large, before ergot is given. In such a case, where the only impediment to delivery is feebleness of the pains (uterine contractions), ergot may be employed with the happiest effect. If, on

the other hand, there be *mechanical impediment*, the effect of ergot may be disastrous to either or both the mother and child. The unremitting contractions of the womb, induced by the drug, may kill the child by the pressure which they exert, or they may result in the rupture of the womb itself. Hence in labor, at least, ergot ought never to be given except by those possessing knowledge of these indications.

In cases which occur so frequently, of women who, after confinement, lose more or less blood daily for weeks in succession, due to weakness of the womb, ergot will often afford prompt relief. It will also frequently control the exhausting floodings which occur at the change of life. Many other indications for the use of ergot may be pointed out, but these will suffice to show the general principles which should govern its employment. By far the best—and indeed the *only* reliable preparation of this drug is a good fluid extract. Dose, to excite strong contractions during labor: one half to one fluid-drachm (2-4 grams) every hour or half hour until the desired result is obtained; to control the hemorrhages after confinement, spoken of above, and those of excessive menstruation and the change of life, ten to thirty drops three or four times daily. In these latter cases, it may be usefully combined with *tincture of nux vomica* and *tincture of iron*, thus—

Tincture of *nux vomica*..... 3 ii—8 grams.

Tincture of iron..... 3 ii—8 grams.

Fluid extract of ergot..... 3 ss—16 grams.

Mix. Dose: 20 to 40 drops three times daily.

ERIGERON. See Fleabane.

ETHER, COMPOUND SPIRIT OF. See Compound Spirit of Ether.

ETHER, ACETIC.—This has an agreeably pungent odor, and stimulant and antispasmodic properties which render it useful in cases of *fainting* and *nervousness*. A few drops may be poured upon a handkerchief, and the vapor be inhaled.

ETHER (*Sulphuric ether*).—Seldom used internally. For its use by inhalation, see article on *Anæsthesia*, page 483.

EUCALYPTUS (*Eucalyptus globulus*).—Eucalyptus has been highly recommended as a remedy for *intermittent fever*. It is even asserted that the trees freely planted in malarial regions will banish intermittent fevers from the locality. It is being largely experimented with in many diseases.

The dose of the tincture, the most agreeable preparation, is fifteen or twenty drops.

FENNEL SEED (*Foeniculum vulgare*). Plate H.—A pleasant aromatic. Much used to correct the harshness and griping operations of other medicines. Dose: twenty to thirty grains (1.333-2 grams) of the bruised or powdered seed.

FEVERFEW (*Pyrethrum parthenium*).—A bitter tonic, closely analogous to *Chamomile* in its action and may be used for the same purposes.

FEVER ROOT (*Triosteum perfoliatum*, *Tinker weed*, *Wild Ipecac*).—An indigenous plant, but not very common. The root is a good cathartic, acting much like jalap; in large dose emetic. The dried root is impaired by age. Dose: of the powder twenty to thirty grains (1.333-2 grams), and of the decoction a proportionate quantity.

FIG (*Ficus passa*). Plate D.—Slightly laxative and mucilaginous.

Roasted, they are sometimes applied for *gum boils*, *abscesses* about the *anus* and *genital* organs.

FIGWORT (*Scrophularia nodosa*).—Received its name from the supposition that it is useful in *scrofula*. It is still employed for scrofulous eruptions and swellings. A decoction of the leaves or root may be used.

FLAXSEED (*Linum usitatissimum*, *Linseed*). Plate D.—Infusion used as a demulcent. Ground, it is employed in the preparation of poultices.

FLEABANE (*Erigeron canadense*, *Horse-weed*).—This common weed has stimulant and astringent properties which, to some extent, offset its unsightly appearance. It has been used with success in *uterine hemorrhages*, *diarrhœa*, *dysentery*, *irritation* of the *bladder*, and *gonorrhœa*. Other species, as *E. annuus*, *E. Philadelphicum*, and *E. strigosum*, have properties nearly or quite identical.

An infusion prepared with an ounce (32 grams) of the leaves and tops to a pint (512 grams) of water, may be given in doses of a wine-glassful. An oil is prepared which may be given in five drop doses every hour, if needed, to restrain hemorrhage.

FOWLER'S SOLUTION. See Arsenical Solution.

FOXGLOVE. See Digitalis.

FRANKINCENSE (*Boswellia Carterii*, *Olibanum*). Plate L.—Used as an ingredient of various stimulating plasters and ointments, and its fragrant fumes to conceal unpleasant odors.

GALANGAL (*Alpinia officinarum*).—Galangal has a pungent, aromatic taste somewhat like that of ginger. It may be used with advantage in some cases of *indigestion*, especially when accompanied with *flatulence*.

The powder may be used in doses of twenty to thirty grains (1.666–2 grams), and the decoction in the same proportion.

GALBANUM (*Ferula galbaniflua*).—This is a gum resin whose action resembles that of assafœtida and ammoniac. It is employed for its stimulating properties in *chronic bronchitis*, and in *chronic catarrh* of the *intestines*, *uterus*, *vagina*, etc.

Dose: From five to twenty grains (.333–1.333 gram).

GALLIC ACID. See Acid, Gallic.

GALLS. See Nut-galls.

GAMBOGE (*Garcinia Hanburii*).—Indigenous to the East Indies.

Gamboge is a gum resin possessing active purgative qualities, seldom used alone. Enters into the composition of *Compound Cathartic Pills*.

GARGET. See Pokeweed.

GARLIC (*Allium sativum*). Plate I.—The *garlic*, *leek*, and *onion*, all possess similar properties. They are stimulant when applied to the skin, and their odor is both stimulant and antispasmodic. Useful in *hysterical* paroxysms, and in catarrhal troubles of children. A syrup of onions is good in colds. Boiled, they make excellent poultices. The core, or central part of a boiled onion is frequently introduced into an aching ear with happiest effect.

GAULTHERIA (*Gaultheria procumbens*, *Checkerberry*, *Wintergreen*).—Gaultheria is a stimulant and somewhat astringent, though its medicinal properties are of no very active character. In the form of de-

coction it has been used in retarded menstruation and in chronic bowel complaints.

The oil of *wintergreen* made from this plant is much used to cover the taste of nauseous medicines.

GELSEMIUM (*Gelsemium sempervirens*, *Yellow jessamine*).—This is a beautiful climbing shrub indigenous to the Southern States. The root is the part employed in medicine. The whole plant is actively poisonous, and very sad results have followed its indiscriminate use. Even now its action is hardly well enough understood to render its administration absolutely safe.

It is used in fevers of an inflammatory character with the result of lowering the pulse and temperature, but is by no means so manageable as *aconite*. Its employment as a domestic remedy is to be discouraged, since skilful physicians use it, not unfrequently, with hesitation.

GENTIAN ROOT (*Gentiana lutea*). Plate L.—This plant is indigenous to the mountainous regions of Southern Europe. We have numerous species of gentian, all beautiful plants, which possess, in some degree, the properties of the above-named European plant, and may be substituted for it when occasion requires.

Gentian is a pure and simple bitter tonic. It strengthens the digestion and improves the appetite. Is useful in convalescence from acute or chronic diseases where the organs of digestion require simple stimulation. It may be employed in infusion, extract or compound tincture. Dose: of infusion a wineglassful; of extract, ten grains (.666 gram); of tincture, a teaspoonful.

GERANIUM. See *Cranesbill*.

GERMANDER (*Teucrium canadense*).—Our native germander, or woodsage, is tonic, stimulant, diaphoretic, and diuretic. The infusion has been recommended in *bronchitis*, *leucorrhœa*, and *amenorrhœa*.

GINGER (*Zingiber officinale*). Plate G.—An excellent stimulant and carminative, and is frequently given in dyspepsia, flatulence, and to correct other medicines. Dose of the powder is from five grains to twenty (.333–1.333 gram). An infusion may be made by pouring a pint (512 grams) of boiling water upon half an ounce (16 grams) of the powder or bruised root, the dose of which is two to four table-spoonfuls.

GINSENG (*Aralia quinquefolia*). Plate D.—The Chinese value ginseng above all other remedies, and use it in nearly all their prescriptions when possible. Other nations, however, have never been able to find it possessed of such miraculous powers as the Chinese claim. On the contrary, it is believed to be almost or entirely inert, if we except a slight aromatic quality. Many people form the habit of chewing it. For this purpose it is doubtless as harmless as anything could be.

GLAUBER'S SALT (Sulphate of Soda).—It is a mild and sure purgative, in doses of from two drachms to an ounce and a half (8–48 grams), and was formerly much in use, but at present Epsom salts are almost invariably preferred.

GLYCERINE.—A sweet principle obtained from fat and fixed oils. Used internally to sweeten mixtures where it is not desirable to employ syrups or sugar. Externally, it is applied in skin diseases, either alone or with *carbolic acid*, *tannin*, *gallic acid*, *starch*, etc. Many other uses will readily suggest themselves.

GOLD, CHLORIDE OF.—This is used by some in affections of the liver, syphilis, and rheumatism. Dose is from one twentieth to one tenth of a grain (.0033–.0066), in pill. The ointment of ehloride of gold is sometimes applied to rheumatic joints. Seldom used.

GOLDEN-ROD (*Solidago odora*).—The Golden-rod family is a very large one, and nearly all of the species have a disagreeable odor; the one above named is alone entitled to the name "sweet scented." It is a pleasant aromatic and earminative; useful in flatulent colic and to cover the taste of nauseous medicines.

An infusion made with an ounce (32 grams) of the tops and leaves to a pint (512 grams) of boiling water may be given in wineglassful doses. The oil is prescribed in doses of one to five drops.

GOLD-THREAD (*Coptis trifolia*).—A bitter tonic without astringency. Useful in dyspepsia and convalescence from various diseases. A tincture made by macerating an ounce (32 grams) of the root in a pint (512 grams) of dilute alcohol may be given in doses of one or two teaspoonfuls three times daily.

GOLDEN SEAL (*Hydrastis canadensis*, *Orange Root*, *Yellow Root*, *Yellow Puccoon*).—This remedy is by some considered valuable in catarrhal inflammations generally, whether of the eyes, nose, urethra, rectum, vagina, or womb. It is employed both externally and internally. In *gonorrhœa*, a lotion of one or two fluid-drachms of the tincture in a pint of water, may be injected every half hour for six or eight hours, and after that from three to six times a day. This is said to act very satisfactorily. An injection of the above strength is certainly useful in the later stages of the disease. The same lotion may be used in catarrhal inflammation of the eyes, nose, and vagina, and in piles, while five or ten drops of the tincture is administered internally three or four times daily. The lotion is also valuable as an application to ulcers, fissures, and cracks of the nipples.

The best preparation of golden seal is a tincture made by macerating one part of the fresh root in five of dilute alcohol.

GOULARD WATER. See Lead.

GREEN IODIDE OF MERCURY. See Mercury, Protiodide of.

GRINDELIA (*Grindelia robusta* and *G. squarrosa*).—Plants growing west of the Mississippi. Grindelia has been recently introduced as a remedy for *whooping-cough*, *bronchitis*, and *asthma*. In some cases it certainly does act very satisfactorily. The fluid extract is the most reliable preparation, and may be given in doses of from ten to thirty drops every two or three hours. This preparation (the fl. ext.) has been recommended as a local application in poisoning by *poison ivy*. It has, however, no specific influence here; it merely protects the skin from the air, through virtue of its resinous properties, and any other application which accomplishes this will do as well.

GROUND IVY (*Nepeta glechoma*).—Used in *chronic bronchitis*, *catarrh of the bladder*, and in some cases of *dyspepsia*. The infusion may be given in wineglassful doses.

GROUND LAUREL. See May Flower.

GROUND LILY. See Beth Root.

GUAIAC (*Guaiacum officinale*).—The substance called guaiac exudes from a tree, native of the West Indies, the wood of which is well known under the name of *lignum vite*. It is possessed of moderately stimulating and sudorific properties, and is given to promote perspira-

tion in some forms of gout, chronic rheumatism, and in certain affections of the skin, but is rarely employed alone. In the West Indies it is much used in the treatment of syphilis and yaws.

The dose of gum guaiac is ten or twenty grains (.666–1.333 gram), mixed with a little mucilage of gum arabic, or made into pills; the *ammoniated tincture* may be taken in doses of from thirty drops to a drachm and a half (3–6 grams) twice or thrice a day, with yolk of egg or a little mucilage; if given by mistake in water it becomes white and thick.

GUARANA (*Paullinia gorbilis*).—A very useful remedy in *nervous headache*. The dose of the powder is from fifteen to sixty grains (1–4 grams).

GUM ACACIA. See Gum Arabic.

GUM AMMONIAC (*Dorema ammoniacum*).—Gum ammoniac is the produce of an umbelliferous plant which grows in Persia. This gum-resin is useful as an expectorant in the chronic cough in old persons, and in some forms of asthma. In the cough which attends hysterical, dyspeptic, and hypochondriacal affections it is said to be a serviceable remedy. Ammoniac ought not to be given in consumption, nor when inflammatory symptoms are present. Externally, it is used to reduce indolent tumors.

The dose of gum ammoniac is from ten to thirty grains (.666–2 grams).

GUM ARABIC (*Acacia vera* and other species). Plate K.—When dissolved in water it is in common use as a demulcent drink, and enters into the composition of many of the mixtures, jujube and other lozenges, used to allay coughing. It is also sometimes employed in strangury, and at the commencement of gonorrhœa. *Gum-water* is much used by the French in irritation and inflammation of the stomach and bowels; but there is no evidence to show that it possesses any advantage over linseed-tea, barley-water, and similar demulcent drinks. Gum arabic may be taken in any quantity; indeed, the negroes of some parts of Africa subsist on it in seasons of scarcity. Dissolved in twice its quantity of water it is called *mucilage*, which is much used to render oils, balsams, and resinous substances diffusible in water, and serves to give consistence to medicines made into pills.

GUM HEMLOCK. See Canada Pitch.

GUM TRAGACANTH. See Tragacanth.

HARDHACK ROOT (*Spiraea tomentosa*, *Meadow Sweet*).—Not only the root but also the leaves and bark are tonic and astringent. Used in diarrhœa, cholera infantum, dyspepsia, etc. It is thought to be superior to many other astringents in ordinary cases. A decoction is made by boiling an ounce (32 grams) of the root, leaves, or bark in a pint (512 grams) of water, the dose of which is one to two ounces (32–64 grams) three or four times a day.

HELLEBORE, BLACK (*Helleborus niger*, *Christmas Rose*). Plate G.—A powerful cathartic. Used in dropsy, and in promoting the monthly discharge of females, for which it is highly esteemed. It has been used in diseases of the brain and of the skin. Dose: of the powder, five to fifteen (.333–1 gram) grains, as a cathartic. A decoction may be made by boiling one drachm (4 grains) of the root in a pint (512 grams) of water. Dose: a fluid-ounce (32 grams) every two or three hours until it operates.

HELLEBORE, GREEN. See Veratrum.

HELLEBORE, WHITE. See Veratrum.

HEMLOCK, POISON (*Conium maculatum*).—This well known plant, though a native of Europe and Asia, has become naturalized in this country, where it grows freely in waste places and along streams. It was the juice of this plant which was used to destroy the life of Socrates. In appearance it closely resembles another common poisonous plant, also used in medicine, *Cicuta maculata*. One point of difference will suffice to distinguish the one from the other when collecting the plants for use. *Cicuta* has leaves with sharp saw-tooth edges, the veins terminating at the *point of the angle between two teeth*; in the leaves of conium, the veins terminate at the *points of the teeth*.

Hemlock has long been esteemed for its influence upon cancerous and other tumors, glandular swellings, and serofulous manifestations. Used internally and applied externally, it mitigates the pains of cancer, and thus leaves the patient with incurable disease more strength to resist its encroachments. Its sedative influence is valuable in *mania*, and sometimes in *delirium tremens*, and a variety of nervous affections. One of the drawbacks, however, is the uncertainty of all preparations of the drug. The extract is altogether unreliable. The juice may be used in the commencing dose of one fluid-drachm, (4 grams). This may be given every two or three hours, the size of the dose being gradually increased until the sedative effect is produced. The bruised leaves may be applied externally as occasion requires.

HENBANE (*Hyoscyamus niger*). Plate J.—Like stramonium and belladonna, to both of which it is closely allied, henbane is a native of Europe, but has followed civilization to this country. It grows in waste places, about buildings and along roadsides. In some sections of the country, this plant is confounded with stramonium, the latter being erroneously called henbane. Attention to the following points may serve to distinguish them. Stramonium is *smooth*, has large, *plaited*, white or purplish flowers growing in the *forks of the stem*, and has large, prickly *pods*. Henbane is *clammy* to the touch, covered with *soft hairs*, and bears its flowers in one-sided spikes.

All parts of this plant are poisonous, and accidents have frequently occurred from mistaking its root for that of parsnip, to which it has a strong resemblance.

Great advantage is to be derived from it, as a narcotic, in cancer and other painful disorders. Its value as a narcotic is well established, and next to opium it is considered the most useful remedy of this class. Indeed, in many cases it has a great advantage over opium, inasmuch as it possesses no stimulating principle; or, in other words, is directly sedative and narcotic. Hence, in all inflammatory affections, where it is found necessary to administer an anodyne or soporific, this remedy will have the effect of tranquillizing the patient, without producing the least excitement; whereas opium, on the contrary, from its stimulating action, would tend to increase the restlessness and aggravate the inflammation. Henbane has also the advantage of being divested of the constipating property which opium possesses, and has a tendency rather to open the bowels than otherwise. It seldom produces headache, which opium very frequently does.

In the diseases of children, henbane may very often be used with

advantage, instead of opium. In *sunstroke*, *monomania*, *meningitis*, and *delirium tremens*, in all of which opium is generally inadmissible, henbane is frequently very valuable.

The dose of the extract, in chronic disorders, should not be less at first than two grains three times a day, which may be gradually increased to five or six grains. When intended as a soporific in acute affections, the dose may be from five to ten (.333-.666 gram) grains at bedtime. The dose of the tincture is from twenty drops to a drachm. The effects of an overdose of henbane are similar to those produced by aconite. It ought to be remarked that the extracts of henbane, aconite, and hemlock, commonly found in the shops, are often inert, and may be taken in almost any quantity; hence many practitioners prefer the tinctures of these plants, as preparations more to be depended upon.

HOFFMANN'S ANODYNE. See Compound Spirit of Ether.

HOPS (*Humulus lupulus*). Plate E.—As is well known, the conical shaped fruit of the hopvine is sprinkled over with a yellow powder, of a rather penetrating and not unpleasant odor. This powder is called *Lupulin*, and to it belongs all the medicinal value of hops. Lupulin is tonic and narcotic. It is of use when sleeplessness is due rather to exalted nervous sensibility than to pain. It is often employed to control the *nocturnal pains of gonorrhœa*, and for checking *nocturnal seminal emissions* and *incontinence of urine*. It may be given in doses of five or ten grains (.333-.666 gram) or even more, preferably in the pill form. A tincture is also employed. Hop fermentations, and hop pillows are of too common use to require more than mere mention.

HOREHOUND (*Marrubium vulgare*). Plate E.—A stimulant, expectorant, and carminative. It is often employed in *dyspepsia*, *chronic bronchitis*, and many other diseases. Generally given in infusion.

HORSE-BALM (*Collinsonia canadensis*, *Stone-root*).—Considered useful in *dropsy*, *gravel*, and *catarrh of the bladder*. Has also been used with success in *diarrhœa*, *dysentery*, and *piles*. The root is the part used, and may be administered in infusion or tincture. The latter is made by macerating one part of the fresh root in two of alcohol, and may be given in doses of from ten to thirty drops.

HORSECHESTNUT (*Æsculus hippocastanum*). Plate C.—Horsechestnut bark has been used with asserted success in *periodical fevers* and *neuralgia*. The decoction may be taken in wineglassful doses.

HORSEMINT (*Monarda punctata*, *fistulosa*, and *didyma*). Plate H.—All these species of monarda are called *horsemint*, and are regarded as diaphoretic, diuretic, carminative, and emmenagogue. The hot infusion is useful in the beginning of colds. It may be used freely.

HORSERADISH (*Cochlearia armoracia*).—The root is commonly used as a stimulant to the digestive functions, while the leaves are applied externally as a rubefacient instead of mustard. It is also diuretic.

HORSEWEED. See Fleabane.

HYDRANGEA (*Hydrangia arborescens*).—Said to be diuretic, and useful in gravel, but nothing *positive* is known of the truth of this report.

HYDRARGYRUM. See Mercury.

HYDRASTIS. See Golden Seal.

HYDRIODATE OF POTASH. See Potash, Iodide of.

HYDROCHLORIC ACID. See Acid, Muric.

HYOSCYAMUS. See Henbane.

HYSSOP (*Hyssopus officinalis*). Plate M.—Tonic and carminative. Useful in *dyspepsia*, *chronic bronchitis*, *scanty menstruation*, and applied externally in *bruises*, and *muscular rheumatism*. Infusion made with a drachm (4 grams) of the leaf to a pint (512 grams) of water, may be given in wineglassful doses.

ICELAND MOSS (*Cetraria islandica*). Plate I.—Strictly speaking, this is not a moss, but a lichen. It is nutritious, demulcent, and tonic, and is considered of value in *chronic pulmonary affections*, and also *chronic dysentery* and *diarrhoea*. It is administered in decoction. This is made by boiling three ounces (96 grams) of the moss in a pint and a half (768 grams) of water, down to a pint (512 grams) or less, and then sweeten it with liquorice. Dose: a fluid-ounce (32 grams), every three hours.

INDIAN HEMP (*Cannabis indica*, *Cannabis sativa*, *Hashish*). Plate A.—The hemp plant is a native of the East, but is found growing now throughout the civilized world. That which grows in India, however, possesses the medicinal properties to a greater extent than the identical species cultivated here for cordage.

This, the true *Indian hemp*, is to be carefully distinguished from one of our native plants popularly called by the same name. See Bitter Root.

Indian hemp allays pain, produces sleep, quiets spasmodic cough and nervous irritability. It possesses stimulating properties which exalt the spirits and remove anxiety. From this very brief statement of some of its properties, it will be readily observed that hemp has a wide range of usefulness.

It has been found especially valuable in *tetanus* (lockjaw). In this disease, so generally disastrous to life, the patient may be placed profoundly under the influence of the drug, and kept there, if possible, until spasmodic action ceases. *Neuralgia*, *neuralgic headache*, *sick headache*, *chorea*, and *delirium tremens* are some of the many diseases in which hemp has been found useful.

The most reliable preparation is the extract. Dose: one half grain (.033 gram) to two grains (.133 gram). As the drug is often of poor quality, care must be taken in its employment to watch for its quieting influence.

INDIAN TOBACCO. See Lobelia.

INDIAN TURNIP (*Arisæma triphyllum*).—In the fresh state Indian turnip is very acrid; applied to the skin, it will blister, and being chewed, it has a burning, caustic taste, and leaves the mucous membrane of the mouth in an irritated condition for several hours. This acrid principle is volatile and is dissipated in drying. Partially dried, it has been used in flatulent colic and bronchitis. Some consider it an excellent expectorant. An ointment made by stewing the fresh root in lard has been employed for the sore mouth of children, called *thrush*, and for *ringworm*.

Dose: of the powdered root, ten or fifteen grains (.66–1 gram), in syrup.

IODINE.—Iodine is principally obtained from the ashes of seaweeds. It is seldom used alone internally, though quite frequently in

the form of iodide of potassium, iodoform, iodide of iron, etc. Externally, in the form of tincture, it is used as a counter-irritant, and to produce absorption in a great variety of cases. *Glandular swellings, inflammations of the joints, whether arising from rheumatism, sprains, or occurring spontaneously, skin diseases, sore throat, burns and scalds, chilblains, etc.*, are a few of the many affections to which it is applicable.

IODIDE OF AMMONIUM. See Ammonia, Iodide of.

IODIDE OF POTASSIUM. See Potash, Iodide of.

ODOFORM.—Stimulant and anæsthetic. Most frequently applied locally to ulcers and sores. It relieves pain and stimulates them to take on healthy action. It is most beneficial in certain kinds of venereal ulcers. Has also been applied with success to ulcers about the mouth of the *womb*. Its disagreeable, penetrating odor is a bar to its general use. Internally it has been used for the relief of *gas-tralgia* and ulcer of the *stomach*.

Dose, when used internally, one to three grains (.066–.20 gram) in pill. Externally, it may be applied to ulcers in powder, or fifteen grains (1 gram) may be dissolved in a drachm (4 grams) of ether, and this solution applied with a brush.

IPÉCAC (*Cephaelis ipecacuanha*). Plate J.—This plant is indigenous to South America. The root is the part used.

Ipecac is diaphoretic, expectorant, and emetic, and has other effects, under certain circumstances, none the less valuable because it is difficult to understand how they are produced. As a diaphoretic and expectorant, ipecac is suited to *coughs* and *colds*, and is perhaps more used than any other single drug in these cases; especially in *bronchial difficulties* of children does it produce the happiest effects. It loosens the cough and helps to raise the mucus, without producing any prostration. It is also one of the standard medicines in the treatment of *croup*, both spasmodic and membranous.

Of late it has been much praised as a remedy in the *vomiting of pregnancy*. For this purpose very small doses (one drop) of the wine of ipecac are given every hour. It has also produced the happiest effect upon *infantile vomiting and diarrhœa* when given in minute doses.

It is asserted by some to have a specific effect upon *dysentery*. The plan of treatment is the following: as soon as possible after the beginning of the disease, from twenty to thirty grains (1.33–2 grams) are given in a small quantity of fluid, the patient kept prostrate in bed, and denied all drinks for three hours. In eight or ten hours a smaller dose can be given, and it is asserted that the plan will result in rapidly curing this disease in a great majority of cases.

As an emetic, ipecac is one of the very best for ordinary use. It acts promptly, efficiently, and without much prostration.

It may be given in substance, wine, or syrup, in doses suited to the effect desired. As a diaphoretic and expectorant, the dose must be small, one grain (.066 gram) or less of the powder; of the wine or syrup, from five to twenty drops. As an emetic, twenty or thirty grains (1.33–2 grams) with half a pint (256 grams) of water.

IRISH MOSS *Chondrus crispus*.—Irish moss is not a moss, but a seaweed, and does not grow on the coast of Ireland exclusively, but

is found also on the Atlantic coast of North America from New Jersey northward.

It is slightly demulcent and nutritive, and like *Iceland Moss* is used in pulmonary affections, etc. See *Iceland Moss*.

IRON.—Of all the metals, in medicine as in the arts, iron is the most useful. To enumerate all the conditions in which it is serviceable would occupy more space than can be devoted to the whole subject. Perhaps without an exception, all the preparations of iron are tonic in their action. Some of them have, in addition, a powerful astringent quality. The salts formed with organic acids are, in general, less astringent and stimulating than those formed with mineral acids. This fact is to be carefully considered in prescribing iron.

Iron is indicated in all anæmic conditions of the system, whether resulting from acute or chronic diseases. It is indicated not merely as a *medicine*, but perhaps more properly as a *food*, for it is one of the natural constituents of the blood, and without the blood contains it in normal proportion the individual must suffer in the same way that he would if deprived of necessary food.

Of the many preparations of iron, the following are the most important:

IRON AND AMMONIA, CITRATE OF.—Dose, five grains (.333 gram).

IRON AND AMMONIA, TARTRATE OF.—Dose, ten to thirty grains (.666–2 grams).

IRON AND POTASH, TARTRATE OF.—A valuable preparation. Dose, five to twenty grains (.333–1.333 gram).

IRON AND QUININE, CITRATE OF.—A valuable preparation in convalescence, and where the double effect of iron and quinine in small doses is required. Dose, five grains (.333 gram).

IRON, CHLORIDE OF.—A powerful astringent, used locally to control *hemorrhage*. It is applicable to bleeding from the *nose*, the jaw after extraction of teeth, the *womb* after miscarriage, *fungous tumors*, etc. Five parts dissolved in one hundred of water may be applied on lint, or by injection.

IRON, CITRATE OF.—A mild preparation, suitable for children and persons of delicate stomach. Dose, five to twenty grains (.333–1.333 gram).

IRON, DIALYZED.—This preparation has been much vaunted the past few years, but its utility seems rather doubtful. Its only advantage lies in its tastelessness. When the speedy effect of iron is required it cannot be relied upon. Dose, from twenty to thirty drops.

IRON, IODIDE OF.—Used chiefly in the form of syrup of the iodide of iron; given very frequently in scrofulous diseases. Dose, ten to thirty drops.

IRON, HYDRATED OXIDE OF.—Used as an antidote to *arsenical poisoning*. Dose, a teaspoonful frequently repeated.

IRON, PYROPHOSPHATE OF.—Dose, two to five grains (.133–.333 gram).

IRON, SUBCARBONATE OF (*Iron Rust*).—Used in *anæmia* and *neuralgia*. Dose, a teaspoonful.

IRON, SULPHATE OF (*Copperas*, *Green Vitriol*).—Dose, one or two grains (.066–.133 gram).

IRON, SUBSULPHATE OF (*Monse's Styptic*).—Used locally, in powder or solution, to control hemorrhage.

IRON, TINCTURE OF THE CHLORIDE OF. (*Tincture of Iron*).—One of the most valuable of all the preparations of iron. It may safely be relied upon in nineteen twentieths of all cases requiring iron. Dose, ten to thirty drops. Owing to its effect upon the teeth, it should be taken through a quill or glass tube when possible.

JABORANDI (*Pilocarpus pinnatifolius*).—Jaborandi produces very free perspiration, generally attended with profuse salivation. It is used chiefly in *dropsy* dependent upon *Bright's disease*, and in such cases will often diminish the effusion to a marked extent in a very short time. Whenever the urine is suppressed, and there is danger of uræmia, jaborandi may be employed with great confidence. An infusion made with ninety grains (6 grams) in four fluid-ounces (128 grams) of water may be taken in three or four equal portions, at intervals of ten minutes.

Its active principle, *Pilocarpin*, or its nitrate, may be given in the dose of half a grain (.033 gram), or hypodermically in the dose of one quarter of a grain (.016 gram).

JALAP (*Ergononium purga*). Plate M.—Native of Mexico. Jalap is a very active purgative, causing numerous watery stools. Especially valuable in cases of *dropsy*. Dose: fifteen to twenty grains (1 to 1.33 gram). It is very generally combined with *cream of tartar* in the proportion of two or more parts of the latter to one of the former. Sometimes it is combined with *calomel*, especially when it is desired to act upon the liver.

JAMES'S POWDER. See Antimonial Powder.

JAMESTOWN WEED. See Stramonium.

JERUSALEM OAK. See Wormseed.

JUNIPER BERRIES (*Juniperus communis*). Plate C.—This juniper is a different shrub from *Juniperus virginiana*, or red cedar, though frequently found growing beside it. The latter, though often only a shrub, sometimes grows to the height of 90 feet, while the former is never more than a few feet high.

Juniper is stimulant, carminative, diuretic, and emmenagogue. It is much used in *diseases of the kidneys*, *dropsy*, *diseases of the skin*, and *disordered menstruation*. An infusion made with an ounce (32 gram) of the bruised berries in a pint (256 grams) of water, may be given in wineglassful doses. Its action is materially aided by the addition of cream of tartar, or acetate of potash.

JUNIPERUS VIRGINIANA (*Red Cedar*).—The leaves are sometimes used instead of *savine*, which sec. Small gall-like excrescences called cedar-apples, which are found upon the branches, have been used as an *anthelmintic*.

KAMALA. See Kameela.

KAMEELA (*Rottlera tinctoria*, *Kamala*).—A light, finely-granular, brownish-red powder, with little smell or taste, producing some acrimony in the mouth; contains a crystallizable principle—rottlerin; active principle, a resin. Used as a remedy for tapeworm in dose of one drachm to three (4 to 12 grams), in emulsion or tincture.

KEROSENE OIL. See Petroleum.

KINO (*Pterocarpus marsupium*).—Native of India. The dried juice of the tree. Kino is a valuable astringent, often of great service in

diarrhœa and dysentery. May be given in infusion or powder. Dose: ten to twenty grains (.66–1.33 gram). An infusion may be used by injection in *dysentery* and *leucorrhœa*, and as a gargle in *relaxed sore throat*.

KOUSSO (*Brayera anthelmintica*, *Koost*).—Native of Abyssinia. Of all remedies for tapeworm, this is said to be the most certain. It is usually given in infusion. Two drachms (4 grams) are infused in four ounces (128 grams) of boiling water, and, when cold, is drunk, dregs and all. It should be taken after several hours of abstinence from food.

KREASOTE. See Creasote.

KRAMERIA (*Krameria triandra*, *Rhatany*).—A shrub growing in South America. *Krameria* root is slightly tonic and very astringent. Used to restrain *hemorrhage*, and also in the treatment of *diarrhœa* and *dysentery*. It is employed by injection in *leucorrhœa* and *gleet*, and is locally applied in fissures of the *nipples* and *anus*.

Seldom used in substance. An infusion made with an ounce (32 grams) of the root and a pint (512 grams) of boiling water, may be given in wineglassful doses. The extract is also an eligible preparation. Dose: five to twenty grains (.333–1.333 gram).

LACTUCARIUM. See Lettuce.

LADIES' SLIPPER (*Cypripedium pubescens*).—Antispasmodic and slightly narcotic. Is often used instead of *valerian* in cases of *hysteria*; and in the disorders of children where an anodyne is required it may be employed instead of *paregoric* or other preparations of opium.

Of the powdered root, fifteen or twenty grains (1–1.33 gram) may be given; or, what is better, give the same quantity in infusion or tincture.

LAUDANUM. See Tincture of Opium.

LAUGHING GAS. See Nitrous Oxide.

LAVENDER (*Lavandula vera*).—A stimulating aromatic, having a delightful perfume. Seldom used internally, unless in the form of oil or compound spirit. These two preparations are sometimes employed in *hysteria*, the former in doses of two to five drops, the latter one half to one fluid-drachm (2–4 grams).

LEAD (*Plumbum*).—The following are the principal preparations of this metal used in medicine, viz.:

LEAD, ACETATE OF (*Sugar of lead*).—This salt possesses astringent properties of the most valuable character. It is employed internally in *hemorrhage* from the *lungs*, *stomach*, *bowels*, *kidneys*, and *womb*. In chronic *dysentery* and *diarrhœa* it is often the best thing which can be used. In the *diarrhœa* of *consumption* and of *typhoid fever* it is often of great service. Many other conditions might be mentioned in which it is extremely valuable, but the above must suffice.

Externally it is often applied in solution, alone or with opium, to *bruises*, *sprains*, *fractures*, etc.; and as an injection in *gonorrhœa* and *leucorrhœa*.

To control hemorrhage, two grains (.133 gram) may be given every hour; in *diarrhœa* and *dysentery* half as much or less. It is often combined with opium, and given in pill.

As an injection it may be used in the strength of two to five

grains (.133-.333 gram) in an ounce (32 grams) of water; as a lotion one to four drachms (4-16 grams) in a pint (512 grams) of water.

LEAD, CARBONATE OF.—Used externally in the form of powder to protect irritated surfaces, as in *erythema*, *erysipelas*, *chafing*, etc.

LEAD, IODIDE OF.—Used externally in the form of ointment.

LEAD, NITRATE OF.—A solution of ten grains (.666 gram) in an ounce (32 grams) of glycerine or brandy is a useful application to *sore nipples*.

LEAD, OXIDE OF, mixed with oil, is a good application to burns. Common white lead paint is also valuable for this purpose.

LEAD, SOLUTION OF SUB-ACETATE OF (*Goulard's Extract*).—This preparation, diluted with five or ten parts of water, is applied to *bruises*, *sprains*, *fractures*, etc. Opium is often added.

LEPTANDRA. See Culver's Physic.

LETTUCE (*Lactuca sativa*).—Lettuce was formerly much used in medicine, but is very little employed at present except as a salad. It is possible that the species formerly used had more powerful properties than those which are now cultivated, for it is a well-known fact that many plants lose their medicinal properties by long cultivation. The dried juice of lettuce, called *Lactucarium*, is sometimes used instead of opium, to produce sleep, but is very uncertain in its action. Dose: fifteen to thirty grains (1-2 grams).

LIME (*Calcium*).—The following are the principal preparations of lime in common use, viz.:

LIME, BROMIDE OF (*Calcii bromidum*). See Bromides.

LIME, CARBONATE OF (*Chalk, Prepared Chalk*). See Chalk.

LIME, CHLORIDE OF.—Used chiefly as a disinfectant.

LIME, HYPOPHOSPHITE OF.—Usually employed with cod-liver oil in the treatment of consumption, scrofula, etc.

LIME, PHOSPHATE OF.—Medicinal virtues the same as those of hypophosphite of lime, which see. Dose: ten to thirty grains (.666-2 grams).

LIME, SULPHATE OF (*Plaster of Paris*).—Used in making bandages and splints.

LIME-WATER.—Lime-water is prepared in the following manner: Take of lime, one ounce (32 grams); water, two pints (1024 grams). Upon the lime, first slaked with a little of the water, pour the remainder of the water, and shake them together. Then immediately cover the vessel, and set it by for three hours; afterwards keep the solution with the remaining lime in stoppered glass bottles, and when it is to be used take from the clear solution. Lime-water is useful in indigestion attended with acidity at the stomach, is sometimes taken in protracted cases of purging (diarrhœa), and in the latest stages of dysentery. The dose is one or two pints (512-1024 grams) daily, in milk; ten ounces (320 grams) of it contains only four grains and a half (.300 gram) of lime.

Lime-water is employed as an injection in *leucorrhœa* (whites), and is applied as a lotion to indolent ulcers.

Employed by injection for several days in succession, it is one of the best means for destroying *seat-worms*, called also *pin-worms*, so common among children.

LIME-JUICE (*Citrus limonum*, and other species). Plate L.—Lime or lemon juice is used in the preparation of effervescent and refriger-

ant drinks for feverish patients. It is one of the best remedies for *scurvy*.

LIQUORICE (*Glycyrrhiza glabra*). Plate E.—The extract of liquorice is a demulcent which excites the secretions of the throat, and is therefore useful in *sore throat*, *bronchitis*, and *laryngitis*. It is often employed to cover the taste of other medicines.

Powdered liquorice-root is used in the manufacture of pills.

LITHIUM, OR LITHIA.—Of this metal, the following preparations are used, viz.:

LITHIUM, BROMIDE OF. See Bromides.

LITHIUM, CARBONATE OF.

LITHIUM, CITRATE OF.

The two last-named salts are used to remove *uric acid deposits* and *gouty concretions*. Like the corresponding salts of *potash* and *soda* they render the urine alkaline. They are, however, very expensive when compared with potash and soda, and probably little, if any, better. Dose: three grains (.20 gram) three times daily.

LIVERWORT (*Hepatica triloba*).—This beautiful little plant, one of the first to show its lovely blossoms in spring, was formerly much esteemed as a medicine, but has fallen into disuse. It is of no value as a remedy.

LOBELIA (*Lobelia inflata*, *Indian tobacco*, *Emetic herb*). Plate J.—The indiscriminate use of this plant has undoubtedly done great harm, and has caused the unmerited neglect with which it is at present treated. Rightly used it possesses great value; wrongly used it may destroy life. Samuel Thomson, the founder of the "Thomsonian School," averred that it is perfectly harmless in any dose whatever, but unfortunately many of his patients died from the effects of it.

Lobelia is expectorant and emetic. It is chiefly employed nowadays in the treatment of *asthma*, and is really a very valuable agent for this purpose. A teaspoonful of the tincture may be given every hour until either the breathing becomes easier or vomiting is produced. In coughs of a spasmodic or nervous character much benefit may be expected from it.

As an emetic ten or twenty grains (.666–1.333 gram) may be given. An emetic of lobelia, however, should not be administered unless there be some spasmodic difficulty of breathing. To simply empty the stomach of undigested food other drugs are to be preferred.

LOGWOOD (*Hematoxylon campechianum*).—A pleasant astringent. Used in chronic diarrhœa, chronic dysentery, and in the chronic bowel complaints of young children. It is a very good remedy, and much employed. The decoction, in which form it is best given, is made of one ounce (32 grams) of rasped logwood, and two pints (1024 grams) of water boiled to one pint (512 grams). The dose is four tablespoonfuls; for a child two years of age, two teaspoonfuls several times a day.

LOVAGE (*Levisticum officinale*). Plate K.—Carminative, diuretic, and emmenagogue. Used in flatulent *dyspepsia*, *suppression* of the *menses*, and *dropsy*. The dose of the decoction or mixture is a tablespoonful.

LUGOL'S SOLUTION.—This is a preparation of iodine and iodide of

potassium. It is used for the same purpose as iodine. The dose is from five to fifteen drops in sweetened water.

LUNAR CAUSTIC.—Lunar caustic, or nitrate of silver has been used internally, in the dose of a quarter of a grain (.016 gram) made into a pill with bread-crumbs, given three times a day, gradually increased to five grains (.333 gram), in cases of epilepsy, St. Vitus' dance, angina pectoris, and indigestion; but it does not appear to have been attended with much success, and in many cases has produced the effect of imparting a permanent purple or slate color to the skin. Externally, a solution of from five to ten grains (.333-.666 gram) in an ounce of water has been used with much benefit in cases of irritable ulcers. The mode of applying it is by means of a bit of lint fixed to the end of a probe, or with a hair pencil. A weaker solution is an excellent application in purulent ophthalmia, and is sometimes used as an injection in gonorrhœa. It is employed as a caustic to destroy chancres on their first appearance, and in strictures of the urethra it is frequently applied at the end of a bougie with great advantage. Applied round the inflamed surface in erysipelas, it often has the effect of arresting the progress of the disease.

LUPULIN. See Hops.

MANDRAKE (*Podophyllum peltatum*, *May apple*). Plate P.—Mandrake is a cathartic which operates slowly, surely, and, in suitable doses, without violence. It is thus admirably suited to habitual constipation. It appears to act upon the liver in a manner analogous to the action of calomel, and is sometimes used as a substitute for mercurials. A resin, extracted from the root, and called *Podophyllin*, is the preparation generally employed. Dose: one sixth of a grain to one grain (.011-.066 gram). In habitual constipation, a pill made with

Podophyllin, one fifth of a grain (.013 gram),

Ex. of *Nux Vomica*, one half " (.033 gram),

Com. Ex. of *Colocynth*, three grains (2 grams),

may be given every night, or every other night, with excellent effect. In the constipation of young infants, very small doses, one fortieth to one twentieth of a grain (.001-.003 gram), two or three times a day, will often act most beneficially.

MANNA (*Fraxinus ornus*).—The dried juice of a species of ash, cultivated in the island of Sicily. A mild laxative, but producing sometimes flatulence. It is usually given to children and pregnant women. It is commonly combined with senna, rhubarb, salts, etc., the taste of which it conceals. Dose: from one to two ounces (32-64 grams); for children, one to two drachms (4-8 grams). It may be dissolved in water.

MACE. See Nutmeg.

MAGENDIE'S SOLUTION.—A solution of the sulphate of morphia, containing sixteen grains (1.066 gram) to an ounce (32 grams) of water. Dose, five to ten drops.

MAGNESIA (*Calcined magnesia*).—Prepared from the carbonate of magnesia, by heating it to expel the carbonic acid. Magnesia is an alkali, and very useful in neutralizing the acid of the stomach in cases of indigestion characterized by *sour eructations*, *heartburn*, or *flatulence*. It must be remembered, however, that its action is only *palliative*, and does not remove the cause. Given in large doses, it

combines with the acids of the digestive system, producing a purgative salt, which acts upon the bowels.

It is often given, mixed with rhubarb, as a purgative, especially to children.

Employed to neutralize acidity of the stomach, the dose is ten grains (.666 gram); as a purgative, forty drachms (2.666 grams).

It is used as an antidote in cases of poisoning by acids. For this purpose it may be given in large doses at short intervals.

MAGNESIA, CARBONATE OF.—Used for the same purposes as magnesia, but is less efficient.

MAGNESIA, SOLUTION OF THE CITRATE OF.—This medicine is quite popular as a pleasant purgative. It is always prepared by the druggist, and is generally sold in bottles holding about twelve fluid-ounces (384 grams). Half this quantity may be taken at once, followed an hour later by half the remainder. If no effect is produced, the rest may be taken an hour or two later.

The pleasantness of its taste is its best recommendation, for it must be admitted that citrate of magnesia is a very uncertain purgative.

MAGNESIA, SULPHATE OF (*Epsom Salt*).—Epsom salt is a well-known and very excellent purgative. Especially useful in the obstinate constipation caused by lead poisoning. In the dose of from two drachms to an ounce, dissolved in half a pint of warm water, and taken when tepid, it acts freely, without griping. To prevent this salt from causing sickness at the stomach, it may be taken in an infusion of orange-peel, or in any other aromatic or bitter infusion, to which two teaspoonfuls of *tincture of rhubarb* may be added. It quickens considerably the action of the *infusion of senna-leaves*; hence it is frequently given with it, forming *black draught*.

Oxalic acid has a strong resemblance to Epsom salt, and has frequently been mistaken for it; the former, however, may easily be known by its acid taste when mixed with water. See Acid, Oxalic.

MAGNOLIA (*Magnolia acuminata*, *Cucumber tree*, *M. Glauca*, *Sweet bay*, *White bay*, *Swamp sassafras*, *M. Umbrella*, *Umbrella tree*).—The bark of all the above-named species of magnolia is bitter and aromatic without being astringent. Owing to these properties, it is useful in the treatment of intermittents. The decoction taken hot is useful as a diaphoretic in colds, etc. The bark may be given in powder in doses of half a drachm or a drachm (2–4 grams), but the decoction or infusion is to be preferred.

MAIDENHAIR FERN (*Adiantum pedatum*).—This fern, one of the most beautiful of our native species, is reputed to be useful in bronchial affections. The root is the part used, and it may be given in decoction or syrup.

MALE FERN (*Aspidium Filix-mas*). Plate J.—This fern grows sparingly in the Lake Superior region, and westward, but our supply comes from Europe, where the plant is very common.

Male fern is one of the best of all remedies for *tapeworm*. Success, however, depends greatly upon the manner in which it is employed. The patient's bowels should be moved during the afternoon with castor oil, or some other efficient purgative; he should take a very light supper, and at bed-time swallow half a fluid-drachm (2 grams)

of the oil of male fern with a little mucilage, or in capsules. In the morning the dose may be repeated, the patient fasting meanwhile; before noon give a dose of castor oil, which will be followed, in many cases, by the expulsion of the worm entire. If the remedy fail, after a day or two the same course may be repeated, using double the quantity of the drug, or what may be better still, employing another preparation, for those kept in the shops are often of poor quality.

MALT.—Within the past few years, *malt extracts*, in a liquid or semi-liquid form, have been largely employed for their nutritious properties. In many states of debility much benefit may be derived from them. The dose is from one to two teaspoonfuls.

MARJORUM. See *Origanum*.

MARSHMALLOW (*Althæa officinalis*). Plate K. ³—Indigenous to the Eastern hemisphere, but naturalized in some of the salt marshes along the coast of the northern Atlantic States.

The root is a demulcent, useful in irritable conditions of the *mucous membranes* of the *respiratory* and *digestive systems*; may be given in decoction or syrup. The decoction is also used by injection in irritable conditions of the *vagina* and *rectum*.

Malva rotundifolia, the common mallow found growing in door-yards, having round leaves of a dull green color, may be used instead of marshmallow. The whole plant may be employed.

MASTER-WORT (*Heracleum lanatum*, *Cow-parsnip*).—The root of this plant has been used successfully in *epilepsy*. Is also used in *flatulence*, *colic*, and other dyspeptic disorders. It may be given in substance, in the dose of a drachm (4 grams), or in infusion in the same proportion.

MATICO (*Artanthe elongata*).—Matico leaves have an action similar to those of cubebs, useful in *bronchitis*, *gonorrhœa*, *leucorrhœa*, *inflammation of the bladder*, etc. Dose: of the powder, one to three drachms (4–12 grams), several times a day; the decoction or tincture may be used in proportion. The decoction is sometimes used by injection.

MAY APPLE. See *Mandrake*.

MAY FLOWER (*Epigæa repens*, *Trailing arbutus*, *Ground laurel*).—Used like buchu and bearberry in the treatment of urinary disorders. Best given in decoction.

MAY WEED (*Maruta cotula*, *Wild chamomile*).—May Weed is closely allied to *chamomile*, and may be substituted for it. It is, however, much more disagreeable to the taste. When fresh, it is very acrid, and is capable of blistering the skin. A decoction of the flowers may be used to produce sweating; taken cold, it may be used as a tonic in weakened digestion.

MEADOW SAFFRON. See *Colchicum*.

MEADOW SWEET. See *Hardhack*.

MERCURIAL OINTMENT. See *Mercury*, *Ointment of*.

MERCURY (*Hydrargyrum*).—Like very many other valuable remedies which have been much used, mercury has been misused and abused. When properly used, it never does harm; when misused, it is capable of doing great injury.

In the treatment of *syphilis*, it can never be safely dispensed with.

Formerly it was thought necessary to bring the system fully under the influence of mercury, *i. e.*, to produce salivation in a great number of diseases. At present, however, salivation is guarded against. The patient is carefully brought as near the point of salivation as possible without inducing it. In other words, the good effects of the drug are sought, while all its deleterious effects are carefully guarded against.

Mercury is employed internally, and externally by vapor baths and inunctions. Its constitutional effects are produced with about equal certainty, whatever the mode of its employment.

Metallic mercury is not employed medicinally except in the form of *blue pill*, and *mercury with chalk* (*hydrargyrum cum creta*).

The following are the principal preparations of mercury now in use:

MERCURY, CORROSIVE CHLORIDE OF (*Bi-Chloride of M., Corrosive sublimate*).—Used chiefly in the treatment of *syphilis*. Dose, from $\frac{1}{32}$ to $\frac{1}{8}$ of a grain (.002–.008 gram) two or three times a day, given in solution. The compound tincture of cinchona makes an excellent vehicle for its administration.

MERCURY, MILD CHLORIDE OF (*Calomel*).—Used in the treatment of *syphilis*, and, in larger doses, as a purgative, at the commencement or during the course of many diseases. In the treatment of *syphilis* with calomel, small doses are recommended, to be continued for a long time, taking care to lessen the dose or suspend it entirely when symptoms of salivation present themselves; a fractional part of a grain is a sufficient dose for this purpose.

As a purgative, the dose is from ten to thirty grains (1.666–2 grams).

MERCURY, RED OXIDE (*Red precipitate*).—Used in making the *red precipitate ointment* which is employed as a stimulating application for syphilitic and other indolent sores.

MERCURY, PILLS OF (*Blue pill, Blue mass*).—Blue pill is less irritating than any other of the mercurial preparations, and is therefore often used to produce the constitutional effect of the drug in cases which require that effect in doses of two to three grains (.133–.200 gram). When given to excite the secretion of the liver and pancreas, the dose is from three to six grains (.133–.266 gram), followed in a few hours by a saline cathartic.

MERCURY, PROTIODIDE OF (*Green iodide of Mercury*).—One of the best mercurial preparations for the treatment of *syphilis*. Dose: one quarter to one grain (.016–.066 gram) twice or three times a day, given in pill with extract of henbane.

MERCURY, YELLOW SULPHATE OF, (*Turpeth Mineral*).—Is highly recommended as an emetic in *croup*, but it is a dangerous remedy. It has in several cases produced fatal prostration. Dose, two grains (.133 gram).

MERCURY WITH CHALK.—Chiefly used in the bowel complaints of children. Dose, from three to ten grains (.200–.666 gram).

MERCURY, WHITE PRECIPITATE OF (*Ammoniated Mercury*).—Used in making the ointment of white precipitate, which is employed in skin diseases.

MERCURY, OINTMENT OF (*Mercurial Ointment*).—Used by inunction to produce the constitutional effects of mercury, especially in syphilitic children; also for the destruction of *lice*.

MEZEREON (*Daphne mezereum*).—Mezereon bark is a stimulant and irritant. Formerly used in *syphilis* and in chronic *skin diseases*. At present seldom employed except in the form of ointment, which is used to maintain a discharge from blistered surfaces.

MILKWEED (*Asclepias*).—Three of our native milkweeds are used in medicine, namely: *Asclepias incarnata*, (*flesh-colored milkweed*), *A. cornuti* (*common milkweed, or silkweed*), and *A. tuberosa* (*pleurisy root, butterfly-weed*). All have properties nearly or quite identical, though the last named is most highly esteemed. Milkweed is anti-spasmodic, carminative, diaphoretic, diuretic, expectorant, and laxative. Useful in the forming stage of *fevers*, and in *bronchitis, pneumonia, pleurisy, rheumatism, flatulent colic, and dyspepsia*.

A decoction, made with half an ounce (16 grams) of the root to a pint (512 grams) of water may be given in wineglassful doses every hour or two.

MINDERERUS SPIRIT. See Ammonia, Solution of Acetate of.

MONK'S HOOD.—See Aconite.

MONSEL'S STYPTIC.—See Iron, Persulphate of.

MORPHIA.—See Opium.

MORPHIA, ACETATE OF.—Dose, one eighth to one half a grain (.008-.033 gram).

MORPHIA, MURIATE OF.—Dose, same as acetate.

MORPHIA, SULPHATE OF (*Morphine*).—Dose, same as that of the acetate.

MORPHINE. See Opium.

MOTHERWORT (*Leonurus cardiaca*).—A decoction, taken warm, is sometimes used to promote sweating in colds, etc.

MOUNTAIN LAUREL (*Kalmia latifolia*).—Laurel has been used in medicine to some extent, but its action is uncertain and possibly dangerous. Certain it is that *sheep* are killed by eating the leaves, and very serious results have happened to men from eating partridges which had fed upon laurel buds and berries in winter.

Its use as a medicine is not to be encouraged in the present state of uncertainty regarding its action.

MULBERRY (*Morus nigra* and *M. rubra*).—The juice of mulberries makes a pleasant drink for feverish patients, while the bark is said to be used as a remedy for *tapeworm*. Of this last statement, however, there is no reliable evidence.

MULLEIN (*Verbascum thapsus*).—This common plant furnishes, by infusion, a mucilage which may be usefully employed in catarrhal affections of the *respiratory system, bowels and bladder*. It should be made in the strength of an ounce (32 grams) of the fresh leaves and flowers to a pint (512 grams) of boiling water. After cooling and straining, it may be taken freely.

MURIATIC ACID.—See Acid, Muriatic.

MURIATED TINCTURE OF IRON.—See Iron, Tincture of.

MUSK.—A substance obtained from the musk-deer. Stimulant and antispasmodic. Used in all spasmodic diseases, and in typhus, when there is twitching or tremors. It is not much employed on account of its high price. Dose: ten grains (.666 gram) every two or three hours.

MUSTARD (*Sinapis alba*, *white*, and *S. nigra*, *black mustard*).—Mustard is kept in nearly every household as a condiment. As a remedy

it is very convenient as affording an *emetic* which can be administered at a moment's notice, and can be applied as readily externally to relieve *colic pains*, etc. In cases of *poisoning* by *laudanum* or other preparations of opium, an emetic dose of mustard should be given immediately while awaiting the physician. The same measures are applicable to cases of poisoning by other narcotic drugs, as *belladonna*, *stramonium*, etc.

Mustard is also used medicinally in cases of atonic dyspepsia, as a stimulant to the digestion. For this purpose white mustard seed is generally preferred, and is given whole, in the dose of a teaspoonful with a swallow of water. For emetic effect *ground mustard* may be given in the dose of one or two teaspoonfuls stirred in a little warm water; this may be repeated in five or ten minutes if required.

MYRRH (*Balsamodendron myrrha*). Plate II.—Myrrh is stimulant and tonic. Used in chronic *coughs*, *consumption*, *asthma*, and in various affections connected with disordered function of the womb. It is generally combined with iron, or aloes, or other medicines. Dose: from ten to thirty grains (.333–2 grams). Locally it is often used as an application to *ulcerated* and *spongy gums*.

NETTLE (*Urtica dioica* and *U. urens*).—Nettle juice has long been used for *hemorrhages* of all kinds, as those from the *lungs*, *nose*, *womb*, etc. It is also considered useful in certain cases of *gravel*, *jaundice*, and *dropsy*. It should be given in the dose of a tablespoonful every six or eight hours. A decoction of the seeds is said to be useful in *diarrhœa*, *dysentery*, *leucorrhœa* and nocturnal *incontinence* of urine. Externally the entire plant is sometimes used in *lethargy*, *opium poisoning*, and *intoxication*, the patient being beaten with it, thus stinging the skin, and producing a strong revulsive effect.

NEW JERSEY TEA (*Ceanothus Americanus*).—The leaves of this plant were used during the Revolution as a substitute for tea. The root is astringent, and a decoction of it has been used in *gonorrhœa* and *dysentery*.

NITRATE OF SILVER.—See Silver, Nitrate of.

NITRE.—See Potash, Nitrate of.

NITRITE OF AMYL.—Used by inhalation as an antidote to *Chloroform poisoning*, in doses of three to five drops. Sometimes used in the same manner for the relief of *asthma* and *whooping-cough*, and for *sea-sickness*.

NITROUS OXIDE GAS (*Laughing gas*).—Prepared from nitrate of ammonia. Used as an anæsthetic in minor surgical operations, as the extraction of teeth, etc. See Anæsthesia.

NUTGALLS.—Excreescences growing upon various species of oak. Intensely astringent, owing to the tannic acid contained in them. Sometimes used in chronic *diarrhœa*, in the form of an infusion, made with half an ounce (16 grams) to a pint of boiling water and given in the dose of a wineglassful three or four times a day. The tincture is seldom used.

An ointment made of nutgalls, with or without opium, is used for piles.

Nutgalls furnish us with *tannic acid*. See Acid, Tannic.

NUTMEG (*Myristica moschata*).—Cordial, anodyne, and astringent. Used in the preparation of aromatic powders. In mild *diarrhœa* may be used instead of opium.

Dose of powder: five to fifteen grains (.333-1 gram).

Nux Vomica (*Strychnos nux vomica*).—This tree is a native of India. It bears a fruit much resembling an orange in appearance, which is said to be eaten by birds. The seeds are, however, very poisonous, owing to the two alkaloids which they contain, called Strychnia (*strychnine*) and Brucia.

Like many other energetic poisons, nux vomica and its principal alkaloid, strychnia, are very valuable remedies when properly used.

Nux vomica is a nerve tonic, useful in *paralysis*, *neuralgia*, and many other disordered conditions of the *nervous system*. It is intensely bitter, and, like other vegetable bitters, improves the *appetite* and aids *digestion*. In cases of *anæmia* accompanied with *nervous prostration*, nux vomica is a very valuable addition to the preparations of iron so generally employed. In cases of *dyspepsia*, with *flatulence* and *constipation*, attended, as it so frequently is, with *sick-headache*, this drug exerts a very beneficial influence. When ergot is administered for the purpose of controlling immoderate *flowing from the womb*, not occurring at the time of labor, nux vomica is often added, and materially aids in attaining the end desired. The foregoing are but a few of the many cases where nux vomica may be used with advantage. While speaking thus of nux vomica strychnia is included, for their effects are essentially the same. In poisoning by either, no time should be lost in bringing the patient as promptly under the influence of chloroform as possible. This will control the violent convulsions which the poison induces, and give time for evacuating the stomach by emetics.

Doses: Of the tincture of nux vomica, five to twenty drops may be given three times a day, commencing with the smaller dose and increasing gradually. Of the extract, the commencing dose is half a grain (.033 gram) which may be increased to double that quantity.

The commencing dose of strychnia ought not to be greater than $\frac{1}{32}$ of a grain (.002 gram). It should be given in solution. When taken in pills, there is the possibility of their dissolving slowly, so that ultimately a number of them may produce poisonous effects.

OIL OF PEPPERMINT. See Peppermint.

OIL OF SPEARMINT. See Spearmint.

OIL OF VITRIOL. See Acid, Sulphuric.

OIL OF WINTERGREEN. See Gaultheria.

OIL OF OLIVES. See Sweet Oil.

OPIUM (*Papaver somniferum*). Plate M.—Opium is the dried juice which exudes from scarifications made in the green seed capsules of the poppy. See Poppy.

Opium produces a soothing effect upon the body and mind, followed by a disposition to sleep. Its first effect is that of a stimulant, producing fulness and frequency of the pulse, with exhilaration of the mind. This is followed by a condition of depression, in which the pulse falls even below the normal rate of frequency, and sleep is produced which is of a refreshing character. In certain persons very unpleasant after-effects are experienced, as nausea, vomiting, and headache.

The above description refers only to opium administered in small or medium-sized doses. In overdoses the patient sinks quickly into a state of insensibility, with very slow pulse and slow, labored and

snoring respiration, and unless relief is obtained death speedily follows. From very ancient times opium has been employed for the relief of pain and to induce sleep.

It owes its virtues to certain alkaloids which it contains, namely : *morphia* (*morphine*), *codeia*, *narcotina*, and several others less important.

Opium may be given in the dose of one half to one grain (.033-.066 gram). It may be administered in the form of

OPIUM, TINCTURE OF (*Laudanum*), in the dose of ten to thirty drops.

OPIUM, CAMPHORATED TINCTURE OF (*Paregoric Elixir*).

Dose: ten drops to a teaspoonful.

ORANGE FLOWER WATER.—Used chiefly as a vehicle for the administration of medicines. It is slightly stimulating to the nervous system.

ORANGE PEEL. See Bitter Orange Peel.

ORANGE ROOT. See Golden Seal.

ORIGANUM (*Origanum vulgare*, *Wild marjoram*). Plate J.—Used chiefly as a condiment in cooking. The warm infusion is sometimes used to bring out the rash of eruptive fevers, as *measles* and *scarlatina*, and to allay *colic* and the pain of *menstruation*. The oil of origanum is used for the same purposes, though more generally it is applied externally as an ingredient of liniments.

OXALATE OF CERIUM. See Cerium, Oxalate of.

OXYGEN.—*Inhalation of oxygen* is now used as a *stimulating tonic* in a variety of diseases. It is used with more or less success in *asthma*, *bronchitis*, debility, and various affections of the heart and lungs.

Oxygen is prepared by those who have the requisite appliances, and is administered in doses of one, two, three, four or more gallons, according to the patient.

PAREGORIC ELIXIR (*Camphorated Tincture of Opium*).—This is an agreeable anodyne and antispasmodic, and much used to quiet enough, to relieve pain in the bowels, and is given to infants to induce sleep. The dose for an infant is from five to twenty drops; for an adult, one to two teaspoonfuls.

PEREIRA (*Pereira brava*).—A plant indigenous to the West Indies and Central America. The root possesses properties analogous to those of bearberry, pipsissewa, and buchu, and is used for the same purposes, namely: in *urinary troubles*. It may be given in infusion, or fluid extract. Of the former the dose is a wineglassful, and of the latter a teaspoonful, three or four times a day.

PARSLEY (*Petroselinum sativum*).—Freshly bruised parsley leaves are applied to the breasts to prevent their "caking," and to inflamed glands to prevent suppuration.

A decoction of the root is used in cases of painful urination, especially when caused by turpentine or Spanish flies (*cantharides*). It is also recommended in the treatment of scanty and painful menstruation. A strong decoction may be given in doses of a wineglassful three or four times a day.

PENNYROYAL (*Hedeoma pulegioides*).—Pennyroyal is an aromatic stimulant, like very many plants of the mint family, to which it belongs. It is used in flatulent *colic*, in the commencement of *acute*

diseases, and has a popular reputation in *retarded* and *painful menstruation*. Best given in infusion, of which a wineglassful may be taken every hour or two.

PEPPER, BLACK (*Piper nigrum*).—When used medicinally, it is generally for debility of the *stomach*, *flatulent colic*, etc. The dose is from five to twenty grains (.333–1.333 gram), taken with milk or ordinary food.

PEPPER, RED. See Cayenne Pepper.

PEPPERMINT (*Mentha piperita*). Plate K.—Peppermint is a stimulant and carminative, and possesses some anodyne properties. A hot infusion is useful in *colic*, *flatulence*, *diarrhœa*, *vomiting*, *dysmenorrhœa*, etc. The oil and essence may be used for the same purposes. Dose: of the oil, one to three drops, and of the essence, five to fifteen drops. The essence is a very eligible preparation to use for the colic pains of young infants.

PEPSIN.—Prepared from the mucous membrane lining the stomach of the pig, calf, or sheep. Pepsin is one of our best remedies for *dyspeptic ailments*, whether occurring in children or adults. It may often be administered to quite young children suffering from *vomiting* and *diarrhœa* due to imperfect digestion, with signal benefit. It is unnecessary to attempt to particularize all the indications for its use. Suffice it to say that in almost all cases of *chronic dyspepsia*, at one time or another, pepsin may be used with advantage.

The dose is from two to ten grains (.133–.666 gram). It should be taken in a small quantity of water immediately after meals. Very frequently it is given in combination with bismuth.

PERMANGANATE OF POTASH. See Potash, Permanganate of.

PERSIMMON (*Diospyros Virginiana*).—The inner bark of the persimmon-tree, and also the unripe fruit, may be used on account of their astringency, in cases of *diarrhœa*, *leucorrhœa*, *sore-throat*, and *hemorrhage*. It may be most conveniently administered in infusion, of which a tablespoonful to a wineglassful may be given.

PERSULPHATE OF IRON. See Iron, Persulphate of.

PERUVIAN BARK. See Cinchona Bark.

PETROLEUM (*Rock oil*).—Petroleum was formerly used internally in a variety of diseases. At present it is seldom employed except externally as an embrocation to *rheumatic* and *stiff joints*, *inflamed glands*, etc. Kerosene, a refined petroleum, is generally used instead of the crude article.

Cosmoline and *Vaseline* are substances prepared from petroleum, and at present very popular as ointments, either alone or mixed with other substances. They have one important advantage over animal and vegetable fats and oils—they never become rancid.

PHLORIDZIN.—A principle obtained from the bark of the apple, pear, cherry, and plum tree. It is used as a substitute for quinine in the treatment of intermittent fever, and cases are recorded of its success after quinine had failed. The dose is from five to ten grains (.333–.666 gram).

PHOSPHORUS.—Phosphorus has of late years been much employed in nervous diseases, chiefly neuralgia. The best of authors, however, differ upon the questions of its value and safety. In overdoses, or when too long continued, it may produce the most serious results. Therefore it should not be administered except by a physician.

The dose is from one thirtieth to one fourth of a grain (.002-.016 gram). It is generally given dissolved in oil.

For other preparations of phosphorus, see Acid, Phosphoric, Iron, Phosphate and Hyrophosphate, and Hypophosphites of Lime, Soda, etc.

PIGEONBERRY. See Pokeweed.

PINK-ROOT (*Spigelia Marilandica*, *Carolina pink*). Plate P.—“Pink-root and senna” have been so long in domestic use for worms that it is almost superfluous to do more than mention the fact. A decoction made with half an ounce (16 grams) of pink-root, two drachms (8 grams) of senna leaves, and a pint (512 grams) of boiling water, may be given in wineglassful doses two or three times a day.

PIPSISSEWA (*Chimaphila umbellata*, *Wintergreen*, *Prince's pine*).—It is important to note that this plant is not the aromatic wintergreen which furnishes the oil of that name, and whose young leaves and berries are eaten. The aromatic wintergreen, called *checkerberry* in New England, is the *Gaultheria procumbens*, which see.

Pipsissewa is diuretic, astringent, and tonic. Used in dropsy, and affections of the kidneys and gravel, scrofula, ulcers, and diseases of the skin. It is a very popular remedy, and is much employed in all the empirical preparations recommended for diseases of the blood. The decoction is made with an ounce (32 grams) of the leaves to a pint of boiling water, and may be taken in the dose of a wineglassful three or four times a day.

PLANTAIN (*Plantago major*). Plate H.—Plantain was formerly much esteemed as a diuretic, refrigerant, and astringent. At present, however, it is seldom used internally. Applied externally, the bruised leaves have some reputation in *bites of insects*, *slight wounds*, etc.

PLASTERS.—Plasters are made of gums, fats, wax, resins, oils, and other substances.

They are spread on muslin, linen, or leather. They are usually more or less hard, but are warmed by the heat of the body, so that they firmly adhere. They support weak and neuralgic parts, relieve the pains of rheumatism and neuralgia, and act as mild counter-irritants.

PLEURISY ROOT. See Milkweed.

PODOPHYLLIN. See Mandrake.

POISON DOGWOOD. See Poison Sumach.

POISON IVY (*Rhus toxicodendron*, *Poison oak*).—This plant has attracted much more attention from its poisonous effects upon the skin of susceptible persons than for its remedial properties. It has, however, been highly esteemed as a remedy by many physicians, and its use is evidently on the increase.

It has been applied externally in cases of obstinate skin diseases, with the idea of supplanting the action of the disease by that of the remedy, but the plan has been unsuccessful in practice owing to the impossibility of confining the poisonous effects within the required limits. Internally, it is employed for *rheumatism* and various *skin diseases*, and, it is claimed, with excellent results.

Its virtues depend upon a volatile principle which is in a great measure dissipated in drying, hence the leaves should be used while fresh, or what is better, a tincture made from them in the proportion of one part to two of alcohol, by weight. This may be given in

doses of from one to five drops, diluted with water. Care should be taken in using the tincture, for it will poison as readily as the fresh plant.

The symptoms of *Rhus* poisoning are itching, redness, and swelling of the affected parts, commencing generally within a few hours after exposure. In severe cases the swelling increases to an alarming extent, so that the face of the patient, if that be the part afflicted, cannot be recognized by his most intimate friends. In such cases, when the swelling is at its height, blisters form upon the surface, and these breaking, are apt to be succeeded by ulcers both painful and intractable. In milder cases, the surface may be studded with minute vesicles, filled with watery fluid, not specially painful, but giving rise to most intolerable itching. Indeed, in the majority of cases, itching is the most distressing symptom.

The disease generally reaches its height in from three or four days to a week, and then declines. Though generally distressing and sometimes alarming, it is seldom, if ever, fatal.

The treatment of *Rhus* poisoning is very unsatisfactory. A great variety of remedies have from time to time been vaunted as specifics for the disease, but none of them has thus far established its claims, and we are still obliged to rely upon palliatives only. Applications of cold water, solutions of common salt, carbonate of soda, acetate of lead, with or without opium, persevered in steadily will give great relief. Painting the surface with fluid extract of *grindelia* has afforded the writer relief, apparently by keeping the affected surface protected from the air. He has also employed the tincture of *aconite* root, in the same manner, with complete relief from the distressing itching, but the numbness produced by the *aconite* is almost as disagreeable. He has also tried the fluid extract of *gelsemium*, vaunted as a specific, but with no benefit whatever.

Any constitutional disturbance, as fever or excessive pain, must receive appropriate treatment.

It is needless to add that persons who are susceptible to the poisonous influence should studiously avoid touching the plants, or even going near them unnecessarily, for some persons are severely poisoned by the emanation of the *Rhus*.

Poison ivy may be readily distinguished from other species of *Rhus* by having its leaves in threes.

POISON OAK. See Poison Ivy.

POISON SUMACH (*Rhus venenata*, *Dogwood*).—Properties almost or quite like those of *Poison Ivy*; it is, however, more poisonous. The tincture is made in the same manner, and used for the same purposes as *Poison Ivy*, which see.

POKEWEED (*Phytolacca decandra*, *Scoke*, *Garget*, *Pigeonberry*).—In large doses pokeweed is emetic and cathartic; in very large doses it is capable of producing death.

It is used in *rheumatism*, especially when of a *syphilitic* origin, *diseases of the skin*, *piles*, and in *scrofulous* disorders.

The dose of the powdered root as an emetic and cathartic is from ten to thirty grains (.666–2 grams). A decoction of the root, and a tincture of the root and berries, may be used in the same proportion.

PORRY (*Papaver somniferum*). Plate M.—This species of poppy

is indigenous to Asia, where it is largely cultivated for the opium which it produces.

A few days after the petals have fallen the green seed capsules are scarified with a knife, and from these scarifications there exudes a milky juice, which becomes dark-colored in drying, and is the opium of commerce.

Poppy-heads (the seed capsules), were formerly used in medicines, but have been almost entirely discarded. See Opium.

POTASH (*Potassa fusa*).—Caustic potash, as found in the shops, is in white cylindrical pieces, which break easily, and, being exposed to the air, rapidly absorb moisture and become liquid.

It is used in the preparation of various potash salts, and is applied externally as a caustic.

POTASH, ACETATE OF.—A valuable diuretic, especially useful in *rheumatism* and *dropsy*. Dose, from ten to thirty grains (.666–2 grams).

POTASH, BICARBONATE OF (*Sal aërat*).—Its action is very much like that of the preceding. In addition to a diuretic action, both render the urine alkaline. The bicarbonate is sometimes used with vinegar to make an effervescing draught; by this process it would be converted into the acetate. More frequently, however, it is used with lemon-juice or solution of citric acid, the resulting salt being the citrate of potash. Given in this manner it is very popular as a remedy for *rheumatism*. The dose of the bicarbonate of potash is from twenty to sixty grains (1.333–4 grams).

POTASH, BICHROMATE OF. Seldom used.

POTASH, BITARTRATE OF (*Cream of Tartar*).—Refrigerant, diuretic, and laxative. Very frequently used in *dropsy*, especially when dependent upon disease of the kidneys. With an equal quantity of sulphur, given in teaspoonful doses every night and morning, it makes a valuable remedy for *piles*. The dose, as a cathartic, is a half an ounce to an ounce (16–32 grams). As a diuretic a teaspoonful dissolved in a glass of water may be taken every two or three hours.

POTASH, BROMIDE OF. See Bromides.

POTASH, CARBONATE OF.—In solution it is sometimes used externally in skin diseases.

POTASH, CHLORATE OF.—Chlorate of potash is one of the best remedies which we have for *sore throat*, whether *simple* or *diphtheritic*. Also for various forms of *sore mouth*, as that which occurs so frequently in young children, and that produced by the abuse of mercury.

It may be used internally, and also as a wash and gargle. The dose is from five to ten grains (.333–.666 gram). As a wash or gargle, a saturated solution may be employed.

POTASH, CITRATE OF.—Used for the same purposes as the acetate of potash. Dose, twenty to sixty grains (1.333–4 grams).

POTASH AND SODA, TARTRATE OF. See Rochelle Salt.

POTASH, IODIDE OF.—Used chiefly in the later stages of constitutional *syphilis*. In certain forms of *brain disease*, *muscular rheumatism*, *gout*, and *paralysis* it is also useful.

Dose, from five to thirty grains (.333–2 grams).

POTASH, NITRATE OF (*Saltpetre*, *Nitre*).—Used as diaphoretic and *diuretic* in febrile diseases. Paper wet with a strong solution of nitre,

then dried, is often useful in asthma, the patient burning a piece of the prepared paper and inhaling the smoke. The dose is from five to ten grains (.333-.666 gram).

POTASH, PERMANGANATE OF.—Used chiefly as a disinfectant. Has been employed, by injection, in the treatment of gonorrhœa and leucorrhœa, but other remedies are better and less irritating.

POTASH, SULPHATE OF.—Used in the preparation of Dover's powder.

POTASH, SULPHURET OF.—Used in the form of baths in the treatment of various skin diseases.

POTASH, SOLUTION OF (*Liquor potassæ*).—Used to suspend the formation of acid urinary deposits and concretions, and also as an antacid in sourness of the stomach, heartburn, etc.

Dose, ten to thirty drops, largely diluted.

POTASSA FUSA. See Potash.

POULTICES (*Cataplasms*).—Poultices are used for the purposes of warmth and moisture. They are made of a variety of substances—bread and milk, yeast, flaxseed, oatmeal, carrot, Indian meal, mustard, charcoal, onion, arrow-root, and so forth.

The general rule for making them is to mingle the substance—whatever it may be—with sufficient hot water to make a mass sufficiently thick and soft. It is not necessary to weigh or measure the ingredients. Poultices are sometimes medicated by mingling with them a little *laudanum* or *belladonna*, or other anodyne, in order to relieve the pain. Poultices are used for *boils*, *abscesses*, *ulcers*, *gangrene*, and as counter-irritants. Spongio-piline is a very neat and convenient form of poultice. See Spongio-piline.

PRICKLY ASH (*Xanthoxylum Americanum* and *X. Carolinianum*).—Prickly ash is a stimulant and diaphoretic. It is used in flatulent colic, muscular and chronic rheumatism, syphilis, and scanty or suppressed menstruation. Best given in decoction made by boiling an ounce (32 grams) of the bark in three pints (1536 grams) of water down to two pints (1024 grams); of this the dose is a wineglassful four times a day.

PRUSSIC ACID. See Acid, Prussic.

PULSATILLA (*Pulsatilla nigricans*).—Pulsatilla may be used with advantage in inflammations of mucous membranes in which the discharge is of a mucous or muco-purulent character. In *catarrhal disorders* of the eyes, ears, nose, stomach, uterus, and vagina much benefit has been derived from it. In *dysmenorrhœa* and in *orchitis* it frequently produces the happiest effects.

The tincture made from the fresh plant should always be employed. There can be no reasonable doubt that much of the distrust which many physicians have of the drug is due to the employment of a worthless preparation.

The dose is from one to five drops.

PUMPKIN SEEDS (*Cucurbita pepo*).—Pumpkin seeds have long had the reputation of expelling tapeworm, and there is no doubt the reputation is well founded. If properly used they seldom fail. The plan followed by a physician of great experience is this: The patient should, for twenty-four hours, subsist entirely upon the seeds and milk. He should eat them freely whenever hungry, drinking milk in limited

quantities to allay thirst, and at the end of the twenty-four hours, take a dose of castor oil.

It is useless to attempt to destroy tapeworm by this remedy unless the plan laid down be carried out strictly. Giving the seeds in small doses and allowing the patient his usual diet, is certain to result in failure, for which the prescriber, and not the medicine, is responsible.

PYROLIGNEOUS ACID. See Acid, Acetic, Pyroligneous.

QUASSIA (*Simaruba excelsa*). Plate L.—Quassia wood is a simple, bitter tonic, used chiefly in atonic *dyspepsia*, and for loss of appetite. It builds up the system in these cases by simply toning and stimulating the stomach.

It is best given in infusion in doses of a wineglassful. Cups made of quassia wood are often used. By filling one of these cups with water and allowing it to stand a few minutes, it becomes ready for use.

Injections of the infusion are very effective in the treatment of *pin* or *seat* worms.

QUEEN OF THE MEADOW (*Eupatorium purpureum*).—Virtues nearly identical with those of *Boneset*, which see.

QUEEN'S ROOT (*Stillingia sylvatica*).—This was formerly much used in the treatment of *scrofula*, *syphilis*, diseases of the *skin* and of the *liver*. A decoction made with an ounce (32 grams) of the bruised root to a pint (512 grams) of boiling water may be given in doses of a wineglassful three times a day. This decoction is useful as a vehicle for the administration of dilute nitric or nitro-muriatic acid in cases of *dyspepsia*.

QUININE, SULPHATE OF. See Cinchona Bark.

RAGWEED (*Ambrosia artemisiifolia* and *A. trifida*).—Ragweed has bitter tonic properties which have recommended it in *intermittent fevers*. It is not much used.

RED CEDAR. See *Juniperus Virginiana*.

RED PRECIPITATE. See Mercury, Red Oxide of.

RED ROOT. See New Jersey Tea.

RHAMNUS. See Buckthorn.

RHATANY. See Krameria.

RHUBARB (*Rheum palmatum*, and other species). Plate M.—Rhubarb is much employed to give tone to the stomach and bowels, in doses of two or three grains (.133–.200 gram) twice or thrice a day; and in doses of from twenty-five to thirty grains (1.66–2 grams) it acts as a mild and excellent purgative. Rhubarb, besides its *cathartic property*, possesses a slightly astringent principle; hence after its full purgative action the bowels are liable to become constipated. To obviate this it may be taken with cream of tartar, or a small quantity of jalap or magnesia; and it should be combined with calomel when the liver is in a torpid state. The constipating effect which usually follows the purgative action of rhubarb renders it very serviceable in diarrhoea, in cases where we have reason to suppose that the disorder is caused by offending matter lodged in the bowels. Mixed with two or three times its weight of bicarbonate of soda, it is a very useful purgative for children. It is highly recommended for habitual constipation attended with piles, and for the constipation of pregnancy. In these cases a piece of the root may be chewed at bedtime; it is said to act better taken in this manner than when taken in powder.

RHUS. See Poison Ivy, Poison Sumach, and Sumach.

ROCHELLE SALT (*Tartrate of soda and potash*).—This salt is one of the best of the saline cathartics. Dose, from half an ounce to an ounce (16–32 grams). In the form of *seidlitz powders*, which form an effervescing draught, it is very easily taken, even when the stomach is irritable.

Rochelle salt is often used in *acute rheumatism* for the double purpose of relieving the bowels and of rendering the urine alkaline.

ROSE.—The petals of several different species of rose are used in medicine, chiefly on account of their agreeable odor. They have no active medicinal properties.

ROSEMARY (*Rosmarinus officinalis*). Plate P.—Used in various *nervous disorders*. It was formerly thought much of as an emmenagogue. An infusion, one or two drachms (4–8 grams) in a pint (512 grams) of boiling water, may be given in tablespoonful doses. The dose of the oil is one or two drops.

ROSE-WATER.—Used, on account of its agreeable odor, in the preparation of lotions, etc.

ROSIN.—Used in the preparation of ointments and plasters.

RUE (*Ruta graveolens*). Plate L.—Stimulant, antispasmodic, and diaphoretic. Used in hysterics, flatulent colic, and suppressed menstruation. On account of its irritating properties, it requires to be administered with caution. Dose of powder, fifteen to thirty grains (1–2 grams) three times a day. It may be given in infusion, made by adding a pint (512 grams) of hot water to one ounce (32 grams) of the leaves. Dose: two tablespoonfuls three times a day.

SAFFRON (*Crocus sativus*).—Saffron is a stimulant aromatic. The hot decoction has long been in use in domestic practice to favor the eruptions of *scarlet fever*, *measles*, etc. It may also be used to relieve the pains of *menstruation*, *rheumatism*, and *neuralgia*. It is not, however, a remedy of very great power. The decoction is made in the proportion of two drachms (8 grams) to a pint (512 grams) of boiling water. Dose: a wineglassful frequently repeated.

SAGE (*Salva officinalis*). Plate F.—Sage is stimulant, tonic, and astringent. The cold infusion is very efficacious in checking the profuse sweatings of consumption, and those caused by debility alone. It is much aided by the addition of dilute or aromatic sulphuric acid. The decoction is often used as a gargle in ulcers of the mouth, and for sore throat. The infusion or decoction may be made in the proportion of an ounce (32 grams) of the leaves to a pint (512 grams) of water. It may be drunk freely.

SAGO.—The starch prepared from the pith of the sago palm of the East Indies. It is an excellent article of diet for invalids.

ST. JOHN'S-WORT (*Hypericum perforatum*). Plate I.—The ancients held this plant in high estimation, and believed it to possess properties of the most miraculous power. At present, however, it is little used. The hot decoction is sometimes used to bring on retarded menstruation, and the fresh plant, bruised, is applied to contusions.

SAL AMMONIAC. See Ammonia, Muriate of.

SALERATUS. See Potash, Bicarbonate of.

SALICIN. See Black Willow.

SALICINE. See Willow Bark.

SALTPETRE. See Potash, Nitrate of.

SANTONIN (*Artemisia cina*).—A crystalline substance prepared from the unexpanded flowers.

It is one of the best remedies for *lumbricoid worms*. The dose is from one to two grains (.666-.133 gram) given alone, or mixed with sugar, at bedtime and before breakfast. After a few hours, a dose of castor oil should be administered, which is certain to bring away worms if there are any in the intestines.

SARSAPARILLA (*Smilax officinalis* and other species). Plate N.—The different species of sarsaparilla used in medicine grows in Central and South America and in the West Indies.

In the broken-down state of the constitution which has arisen from long-protracted syphilis, or from mercurial irritation, the compound decoction of sarsaparilla, prepared in the following manner, is generally considered an excellent restorative—at least it is very extensively employed: Take of sarsaparilla, sliced, five ounces (160 grams); boiling water, four pints (2048 grams); macerate for four hours in a vessel lightly covered, near the fire, then take out and bruise the sarsaparilla. When bruised, return it to the liquor, and again macerate in the same manner for two hours; afterwards boil down to nearly two pints (1024 grams); then add sassafras, sliced, guaiacum wood shavings, and liquorice bruised, of each five drachms (20 grams); mezereon, a drachm and a half (6 grams); boil the whole for a quarter of an hour, and strain. A pint (512 grams) of this decoction must be taken in the course of the day. The powdered root may be taken to the extent of an ounce (32 grams), in divided doses during the day. In whatever manner sarsaparilla is taken, it must be continued regularly during several weeks.

SARSAPARILLA, FALSE (*Aralia nudicaulis*).—This plant, common in the United States, has been substituted for the true sarsaparilla, but it is not possessed of any very valuable properties. It may be given in decoction or infusion.

SASSAFRAS (*Sassafras officinale*). Plate I.—The bark of sassafras-root is an aromatic stimulant, chiefly used for flavoring decoctions, mixtures, etc. The pith of sassafras branches is used to prepare a demulcent drink, which is very agreeable and useful in *dysentery*, inflammation of the *air-passages*, *stomach*, etc.

SAVINE (*Juniperus sabina*).—Savine is principally used in *menstrual difficulties* depending upon debility of the womb. Indiciously employed, it may often be of use in *scanty*, *profuse*, and *painful menstruation*, through its power of imparting tone to the generative organs. It may be given in powder, in doses of from four to ten grains (.266-.666 gram). More frequently, however, the oil is employed, in doses of from one to five drops. Of the tincture, five drops to a teaspoonful may be given.

Externally, savine is employed in the form of an ointment, to keep up a discharge from blistered surfaces, which it does through its irritant properties.

SCAMMONY (*Convolvulus scammonia*). Plate I.—Scammony is a very active purgative, somewhat like jalap in its action, but much more severe. It was formerly much used in dropsy, but at present it is not much employed. It is so frequently adulterated that it is uncertain.

Dose: five to ten grains (.333-.666 gram).

SCOKE. See Pokeweed.

SCURVY GRASS (*Cochlearia officinalis*).—Belonging to the mustard family, this plant has the family characteristics. It is stimulant, diuretic, and antiscorbutic. It is eaten as a salad. It owes its name to its efficacy in *scurvy*.

SCUTELLARIA, See Sculleap.

SEIDLITZ POWDERS.—These are made of Rochelle salts, two drachms (8 grams), and bicarbonate of soda, forty grains (2.666 grams), in a *blue* paper; and in the *white* paper, thirty-five grains (2.333 grams) of tartaric acid. Dissolve the contents of each paper in half a tumbler of water. Pour one into the other, and drink as it effervesces.

SENNA (*Cassia acutifolia* and other species).—An active cathartic. It may be used in all cases requiring a thorough purging, especially in the early stage of fevers and in inflammatory affections. It is commonly combined with Epsom salts, manna, etc. As it has a tendency to gripe, some aromatic should always be added to it. The infusion is prepared by pouring two ounces (64 grams) of boiling water on two to four drachms (8–16 grams) of the leaves, and allowing it to stand for thirty minutes. The whole for a dose. It may be sweetened with sugar to render it more palatable.

SENNA, AMERICAN (*Cassia Marilandica*) is identical in its properties with the imported drug, but requires to be given in one third larger doses.

The confection of senna is a very pleasant laxative in the dose of two drachms (8 grams).

SIMARUBA (*Simaruba officinalis*).—The bark of simaruba root is intensely bitter, like quassia, and possesses the same tonic properties. It is used in the declining stage of *dysentery*, in *dyspepsia*, and in many other conditions of debility. It is best given in decoction, made with two drachms (8 grams) of the bark in a pint (512 grams) of water, of which the dose is a wineglassful.

SKULLCAP (*Scutellaria lateriflora* and other species).—Plants belonging to the mint family, and like many others of them effective in quieting *nervous disorders*. Best given in infusion, which may be taken freely.

SKUNK CABBAGE (*Symplocarpus foetidus*).—The root of this plant is a useful remedy in many *nervous* and *spasmodic* diseases. It has been used with excellent results in *asthma*, *catarrh* and *chronic coughs*, and in *hysteria*.

Of the dried root, the dose is from ten to twenty grains (.666–1.333 gram); of the fresh root about half as much. A decoction may be employed in the same proportion. In overdoses it may produce very unpleasant effects, as vomiting, headache, and temporary blindness.

SLIPPERY ELM (*Ulmus fulva*).—Demulcent and expectorant. Used for coughs and colds. It is frequently made into a poultice. Used as emollient in form of poultice, made with ground bark, or in thick mucilage, in various external inflammations; as demulcent in dysentery.

SLAKEROOT, BLACK. See Black Cohosh.

SLAKEROOT, SENEKA (*Polygala senega*).—Stimulating, expectorant, and diaphoretic. It is much used in affections of the lungs, and in

large doses it has been successful in rheumatism. Dose of the powder is ten to twenty grains (.666–1.333 gram), but it is usually given in decoction or prepared as a syrup with squills and antimony. To make the decoction take bruised seneka, one ounce (32 grams); water, two pints (1024 grams); boil down to a pint (512 grams) and strain. Liquorice root may be added before boiling to improve the taste. Dose: a wineglassful three times a day.

SNAKEROOT, VIRGINIA (*Aristolochia serpentaria*). Plate P.—Stimulant, tonic, diaphoretic, and diuretic. It is used in typhoid fevers, in ague, in obstructed menstruation, and for promoting the eruption in measles, scarlet fever, etc. Administered generally in infusion and tincture. To make the infusion, take half an ounce (16 grams) of snakeroot and a pint (512 grams) of boiling water; infuse for two hours and strain. Dose: two to four tablespoonfuls, repeated every hour or two in low fever; three times a day or oftener in other affections.

SODA.—Caustic soda is sometimes used externally as a caustic, though potash is more generally preferred.

SODA, ACETATE OF.—Its action somewhat resembles that of acetate of potash. Dose: twenty to forty grains (1.333–2.666 grams).

SODA, BICARBONATE OF.—Frequently used as an antacid in acidity of the stomach and heartburn. Sometimes used in acute rheumatism, though bicarbonate of potash is preferred. Dose: five to thirty grains (.333–2 grams).

SODA, BORATE OF (*Borax*).—Very frequently used for thrush in nursing infants, for cracked nipples, and by injections for sores in the female genital organs.

The dose is from five to thirty grains (.333–2 grams). As a lotion or injection half a drachm to a drachm (2–4 grams) in a pint (512 grams) of water.

SODA, BROMIDE OF. See Bromides.

SODA, CHLORIDE OF (*Common salt*).—Salt is frequently used to check hemorrhage from the lungs and nose, a teaspoonful being given every ten or fifteen minutes. In solution it is used as a gargle in sore throat, and as an injection in nasal catarrh and in leucorrhœa.

SODA, HYPOPHOSPHITE OF.—Used with the hypophosphite of lime in the treatment of consumption, scrofula, etc.

It has also been recommended as a purgative for children. For this purpose ten grains (.666 gram) may be given.

SODA, HYOSULPHATE OF.—Valuable in dyspepsia, characterized by fermentation of the food and belching of gas. Used externally in the treatment of skin diseases. The dose is fifteen grains (1 gram).

SODA, SALICYLATE OF.—Used with great success in the treatment of acute rheumatism. Dose: twenty grains (1.333 gram) every two hours until pain is relieved, then at longer intervals.

SODA, SULPHATE OF (*Glauber's salt*).—Purgative in the dose of half an ounce (16 grams). Seldom used.

SODA, SULPHITE OF.—Virtues the same as those of the hypophosphite salt.

SODA, SULPHOCARBONATE OF.—Useful as a local application to the false membrane of scarlet fever and diphtheria. It may also be given internally in doses of from ten to thirty grains (.666–2 grams).

SOLOMON'S SEAL (*Polygonatum giganteum*, and other species).—

Chiefly employed internally as a remedy for *freckles*, *bruises*, and *sprains*. To prepare a lotion for these purposes the whole plant may be macerated in whiskey or dilute alcohol for two or three weeks.

SPANISH FLIES (*Cantharides*).—Internally Spanish flies are useful in *scaly diseases* of the skin, in *debility* and *catarrh* of the bladder, *incontinence* of urine, *painful urination*, *gleet*, and *acute Bright's disease*. They have been employed in many other diseases, but those named are the principal ones in which they are used at present. The tincture is the most eligible preparation to employ; it may be given in doses of from one to twenty drops. In overdoses, or when too long continued, it produces strangury and bloody urine. When any such symptom occurs the drug should be immediately suspended, and recourse had to mucilaginous drinks with opium, if required to control pain.

Externally in the form of plaster or collodion, Spanish flies are employed to blister the skin in a great variety of diseases. If the plaster be employed, it should be retained upon the skin from six to ten hours, when, if the preparation be good, a blister will have risen, and a poultice may be applied. Cantharidal collodion will act more quickly.

SPEARMINT (*Mentha viridis*). Plate N.—Spearmint, like peppermint, is stimulant and carminative, though less powerfully so. The oil is the preparation chiefly used; it may be given in the dose of five drops.

SPICE BUSH (*Lindera benzoin*).—Stimulant and diaphoretic. Has been used in the forming stages of acute *inflammatory diseases*. A decoction of the bark and berries may be taken in the dose of a wine-glassful.

SPIKENARD (*Aralia racemosa*).—The root is more aromatic than that of *false sarsaparilla* (*Aralia nudicaulis*), but otherwise there is little difference in their properties, and they may be used in the same manner. By making a decoction or syrup of the root, it is said that the Indians employed spikenard for coughs and colds.

SPIRIT OF GALLIC WINE.—Brandy.

SPIRIT OF WINE. See Alcohol.

SPONGES.—Before the discovery of iodine “burnt sponge” was used in the treatment of scrofula. It is no longer so employed.

SPONGIO-PILINE.—This is a combination of *sponge*, rubber, and wool that has recently come into use, and has been found very serviceable as a kind of extemporaneous poultice, and also a substitute for the “compress” of the water-cure. It is made of rubber, lined with sponge and wool to the thickness of about a quarter of an inch. It comes in large rolls, and is sold by the square inch or square foot. If it were not so expensive it would be much more used.

In order to use this spongio-piline for a poultice, simply wet it with warm or cold water, as may be desired, or with some medicated solution, and apply it directly to the parts, the sponge lining being inside. The rubber covering acts like oiled silk, and retains the moisture. When much used, the spongio-piline will need to be frequently washed. The spongio-piline may be applied in the same way to the pit of the stomach in dyspepsia, over the bowels, over the ovaries, to sprained joints, in rheumatism, and so forth.

SPURRED RYE. See Ergot.

SQUILL (*Scilla maritima*).—A bulbous plant indigenous to Southern Europe, but occasionally cultivated in this country for the beauty of its flowers. The bulb is the part used.

Squill is diuretic and expectorant. As a diuretic it is usefully employed in *dropsy*. As an expectorant it is used in *croup*, chronic *bronchitis*, *whooping-cough*, etc. Dose of the powdered bulb, one to three grains (.066–.133 gram); of the tincture, ten to twenty drops; of the syrup, half a teaspoonful to a teaspoonful. A compound syrup, called *Cox's hive syrup*, made of squill, seneka, and tartar emetic, is often used in *croup* to produce vomiting, but is unsafe, on account of the prostration which it frequently induces. The dose is ten to thirty drops repeated every ten or fifteen minutes.

STAPHISAGRIA (*Delphinium staphisagria*, *Stavesacre*).—The seeds made into an ointment are used for destroying lice on the bodies of filthy persons. In the form of tincture stavesacre is sometimes used in *dropsy*, and spasmodic asthma.

The active principle, *delphinia*, is given in the dose of one-half grain.

STAR GRASS (*Aletris farinosa*).—The root of this plant is intensely bitter to the taste, and has the virtues of the ordinary simple bitter tonics. It is best given in infusion made in the proportion of an ounce (32 grams) of the root to a pint (512 grams) of boiling water. Dose, a tablespoonful.

STAVESACRE. See Staphisagria.

STILLINGIA. See Queen's Root.

STORAX (*Liquidamber orientale*).—Storax is stimulant and expectorant, and was formerly much used in chronic *bronchitis*, and in *gonorrhoea*. At present little used except as a constituent of the compound tincture of benzoin.

STRAMONIUM (*Datura stramonium*, *Jamestown weed*, *Thornapple*). Plate O.—Stramonium belongs to the same order of plants as belladonna and henbane, and in its effects closely resembles them. Its sphere of usefulness, however, is more limited. Internally it is most frequently employed for *spasmodic asthma*, and *whooping-cough*. The dried leaves smoked in cigarettes give great relief to many asthmatics. The powder may be given in doses of two or three grains (.133–.200 gram); the tincture in doses of from twenty to thirty drops.

An ointment of stramonium is employed externally for a variety of painful affections. See Henbane.

STRYCHNIA. See Nux Vomica.

STRYCHNINE. See Nux Vomica.

SUBNITRATE OF BISMUTH. See Bismuth, Subnitrate of.

SUGAR OF MILK (*Saccharum lactis*).—Sugar of milk being less sweet than cane or grape sugar is thought to be less liable to fermentation when taken into the stomach. It is chiefly used as a vehicle for small doses of medicine given in the form of powder.

SULPHATE OF QUININE. See Cinchona Bark.

SULPHIDE OF CALCIUM. See Calcium, Sulphide of.

SULPHUR.—Internally, sulphur is chiefly employed in the treatment of *piles*. It is best given with an equal quantity of cream of tartar, a teaspoonful of the mixture being administered in syrup once or twice a day. Its effects are frequently most beneficial. Externally

it is mainly employed in the treatment of *itch*. For the details of its action, and mode of employment, see article on *Itch*.

Sulphur Baths, both artificial and natural, have been greatly extolled in the treatment of various *skin diseases*, and in *rheumatism* and *gout*. In connection with them, the waters are generally taken internally.

SULPHUR, IODIDE OF.—An ointment, one part of the iodide of sulphur to ten or twelve of lard, is sometimes employed in the treatment of *acne* of the face.

SUMACH (*Rhus glabra*, smooth or upland sumach, *R. copallinia*, dwarf sumach, and *R. typhina*, staghorn sumach).—The berries of all these species are acid and astringent, and, in infusion, are often used with excellent effect as a gargle in sore throat. An infusion of the inner bark may be used for the same purpose.

SUMBUL (*Ferula sumbul*).—Sumbul was formerly used in *hysteria*, *chronic bronchitis*, *leucorrhœa*, and *gleet*. The dose of the root is from ten to thirty grains (.666–2 grams).

SUNFLOWER (*Helianthus annuus*).—Sunflower has no medicinal properties of value. An oil is prepared from the seeds which may be used as a substitute for olive oil.

SWAMP SASSAFRAS. See Magnolia.

SWEET BAY. See Magnolia.

SWEET FERN (*Comptonia asplenifolia*). Called *fern* from the resemblance of its leaves to those of ferns. It is stimulant and astringent. A decoction is sometimes used to relieve *colic*, and to check *diarrhœa*.

SWEET FLAG. See Calamus.

SWEET OIL (*Olive oil*).—Olive oil is an important article of food in all countries where the olive flourishes, and is used to some extent in this country for the same purpose. In the dose of one to two fluid-ounces (32–64 grams), it is a gentle laxative. Externally, it is employed as an application to burns, scalds, excoriations, etc.

SWEET SPIRIT OF NITRE (*Sweet nitre*).—Diuretic and diaphoretic. Very frequently employed in febrile diseases to produce sweating. Especially useful in feverish conditions of children. As a diuretic, is used in irritable conditions of the bladder, and in suppression of urine. Dose: twenty to thirty drops, repeated every hour or two, taken mixed with water.

SYRUP OF TOLU. See Balsam of Tolu.

TAG ALDER. See Black Alder.

TAMARIND (*Tamarindus officinalis*). Plate C.—Tamarinds are used to prepare a cooling acid drink which is very grateful to fever patients.

TANNIN. See Acid, Tannic.

TANSY (*Tanacetum vulgare*). Plate M.—Tansy was formerly much used in cases of *delayed menstruation*, *worms*, and *dropsy*. It has tonic and stimulant properties similar to those of wormwood. Best given in strong infusion in doses of a wineglassful frequently repeated. An oil is prepared which may be given in doses of from one to five drops. Externally, a decoction made with vinegar is frequently employed as an application to *bruises*, *sprains*, etc.

TAPIOCA (*Manihpa manihot*). Plate O.—The tapioca or cassava

plant is a native of South America, but is cultivated extensively in all tropical regions.

There are two varieties of the root—the bitter and the sweet. The former is poisonous, containing prussic acid; but this being driven off by heat, cooking renders it innocuous. The tapioca is obtained by expressing the juice and allowing it to deposit its fecula, which is afterwards dried by heat. Occurs in irregular, hard, white grains. Odorless, tasteless. Used as a farinaceous article of food. Prepared by prolonged boiling in milk or water, which converts it into a sort of jelly.

TAR (*Pinus palustris*, *P. tæda*, *P. regida*, and other species).—Tar is used externally in a variety of *skin diseases*, and internally in chronic *pulmonary troubles*. Tar water is prepared by stirring one part of tar with ten parts of water, allowing them to stand a few days, and then pouring off the clear part. It has been used with success in *chronic bronchitis* and *consumption*, lessening the cough and expectoration, and easing the oppression of breathing. It may be taken in the dose of a wineglassful four or more times a day.

Tar may also be usefully employed by inhalation in pulmonary complaints. For this purpose tar water may be used by means of a steam atomizer, or tar may be stirred into hot water and the vapor inhaled.

TARTAR EMETIC. See Antimony, Tartarized.

THORN APPLE. See Stramonium.

THOROUGHWORT. See Boneset.

TINCTURE OF GALLS. See Nutgalls.

TINCTURE OF LUPULIN. See Hops.

TOLU. See Balsam of Tolu.

TRAGACANTH (*Astragalus verus*).—Gum tragacanth is demulcent and nutritious, but seldom used in medicine except as a vehicle.

TRAILING ARBUTUS. See May Flower.

TULIP TREE (*Liriodendron tulipifera*).—The bark of the branches has simple bitter tonic properties, and may be used when simple bitters are required. Best given in infusion made with an ounce (32 grams) of the bark to a pint (512 grams) of boiling water, of which a wineglassful may be taken three or four times a day.

TURPENTINE (*Oil of turpentine*, *Spirits of turpentine*).—This is obtained by distilling the resinous exudation of several different species of pine.

It has been used with success in many varieties of *hemorrhages*, as those from the *nose*, *stomach*, *bladder*, and *womb*. It is especially valuable in the *typhoid condition*, when there is bloating of the abdomen from accumulation of gas. In *typhoid fever* it acts most happily. It is occasionally used in catarrh of the bladder. It will expel tapeworm, though other remedies are better. Many other diseases might be mentioned in which it is occasionally of service, for its sphere of usefulness is great. The dose is from five to thirty drops, given in emulsion, or on a lump of sugar.

Turpentine is a very useful and safe counter-irritant in all internal inflammatory diseases, where counter-irritation is desired. A large piece of folded flannel, dipped in hot water and wrung as dry as possible, and then freely sprinkled with turpentine, should be applied over the part where the pain is most severely felt, and care-

fully covered with a dry cloth to prevent evaporation; this is to be kept on as long as the patient can bear it, and should be renewed as often as may be found necessary. This method of counter-irritation has an excellent effect in determining the blood to the skin, is easily managed, and affords almost immediate relief. The external use of turpentine in this manner, when employed at the very onset, or in mild cases of inflammation, is sometimes of decided service.

TURPETH MINERAL. See Mercury, Yellow Sulphate of.

UMBRELLA TREE. See Magnolia.

VALERIAN (*Valeriana officinalis*). Plate P.—Valerian is stimulant and antispasmodic. Used in *hysteria*, and a variety of nervous disorders. In the hysterical paroxysms so common about the menstrual epoch, valerian is often invaluable. It is one of the *best* remedies for *nervous headache*. In flatulence accompanied with palpitation of the heart it will often do substantial service.

The best preparation for ordinary use is the fluid extract, which may be given in the dose of a teaspoonful every hour or two until it produces the effect desired. See also Valerianate of Ammonia, V. of Iron, V. of Zinc, etc.

VANILLA (*Vanilla planifolia*).—Used for flavoring mixtures. It has no decided medicinal properties.

VASELINE. See Petroleum.

VERATRUM (*Veratrum album*, *White hellebore*).—Decoction used externally to destroy lice.

VERATRUM (*Veratrum viride*, *Green hellebore*, *American hellebore*).—Veratrum is a sedative whose influence is primarily exerted upon the heart. Given judiciously at the commencement of acute inflammatory diseases, when the heart's action is violent, it is capable of doing much good.

The pulse may be reduced in frequency very rapidly by it. It is, however, a remedy which requires to be administered with great care, and is not suitable for domestic use. Dose of the fluid extract, one to three drops every three hours.

VERVAIN (*Verbena officinalis*, and the American species, *V. hastata*).—The roots have a bitter taste, and are supposed to be tonic. The hot decoction is sometimes used in domestic practice as a diaphoretic.

VINEGAR. See Acid, Acetic, diluted.

VIOLET (*Viola odorata*, *V. tricolor*, and *V. cucullata*).—They are diuretic and slightly laxative, and have been used in diseases of the lungs, kidneys, and skin; and some of the varieties are thought to possess virtue in gravel complaints. They may be administered in the form of an infusion, made by adding a pint (512 grams) of hot water to an ounce (32 grams) of the herb. Dose: two to four tablespoonfuls three times a day.

VIRGINIA SNAKE-ROOT.—See Snake-root, Virginia.

WHITE CEDAR (*Thuja occidentalis*, *Arbor vite*).—A strong tincture, or fluid extract, is highly recommended as an application to *fungous growths*, *warts*, etc. It is also used internally in *pulmonary catarrh* and *suppressed menses*. Dose: ten to fifteen drops.

WHITE LEAD. See Lead, Carbonate of.

WHITE OAK BARK. See Black Oak.

WILD CARROT. See Carrot.

WILD CHAMOMILE. See May Weed.

WILD CHERRY (*Prunus serotina*).—Wild cherry bark is tonic and sedative. Its tonic properties are due to its bitterness, its sedative to the prussic acid generated when it is placed in water. It is often administered in *consumption* and during convalescence from various diseases.

It should always be given in *cold infusion* when possible. The decoction contains none of the sedative properties of the bark. A fluid extract is prepared, which may be given in the dose of one half to one teaspoonful. The dose of the infusion is a wineglassful.

WILD CUCUMBER. See Elaterium.

WILD INDIGO (*Baptisia tinctoria*).—The root of wild indigo has been proved to possess a decided influence upon *typhoid fever* and the typhoid state developed in the course of *scarlatina* and *dysentery*. If given early in *typhoid fever* it is believed to abort the disease in many cases. Best given in the tincture, made with one part of the root and two of dilute alcohol.

Dose : one to five drops every hour or two.

WILLOW. See Black Willow.

WINTERGREEN. See Pipsissewa and Gaultheria.

WITCH HAZEL (*Hamamelis Virginica*).—This is one of our native shrubs whose medical virtues are neither as well known nor appreciated as they deserve to be. It is certainly one of the best remedies we possess for *hemorrhage* from the *lungs*, *womb*, and *anus*. In *piles*, whether internal and bleeding or external, it exerts a most valuable influence. Most of the lack of faith in its virtues on the part of physicians is undoubtedly due to their using worthless preparations. The best preparation by far is made by macerating the bark of the young twigs in sufficient dilute alcohol to cover it, for at least a fortnight. Of such a tincture the dose is from five to twenty drops. If continued very long it is apt to produce fullness of the head, and even headache of a violent character. In the treatment of *piles*, at the same time the tincture is being taken internally, injections of it largely diluted with water, one fluid-drachm to a pint (4-512 grams), should be taken daily. A lotion of the same strength is a good application for varicose veins.

WOODSAGE. See Germander.

WORMWOOD. See Absinthe.

WHITE VITRIOL. See Zinc, Sulphate of.

YARROW (*Achillea millefolia*, *Milfoil*).—A stimulant tonic, which may be usefully employed to promote the appetite and improve the digestion. It has been highly recommended in *piles*, *delayed menstruation*, *leucorrhœa*, and *flatulent colic*. An infusion made with half an ounce (16 grams) in a pint (512 grams) of boiling water may be taken in tablespoonful doses every hour or two. Applied locally the infusion is useful in sore throat and sore nipples.

YELLOW DOCK (*Rumex crispus*).—The root of this plant is tonic, astringent, and laxative. Chiefly used in diseases of the skin, especially when of scrofulous origin. Given in decoction made in the proportion of two ounces of the fresh or one of the dried root, bruised, to a pint of water. Dose : a wineglassful three times daily.

YELLOW JESSAMINE. See Gelsemium.

YELLOW PUCCOON. See Golden Seal.

YELLOW ROOT. See Golden Seal.

ZINC, ACETATE OF.—Not used internally. Locally, in solution, it is employed in *conjunctivitis*, *gonorrhœa*, and *leucorrhœa*. The usual strength of the solution used is about one or two grains (.066–.133 gram) to an ounce (32 grams) of water.

ZINC COMBINATION. See page 495.

ZINC, PRECIPITATED CARBONATE OF.—Used externally, to absorb the moisture from blistered and chafed surfaces, and to protect them from the air.

ZINC, CHLORIDE OF.—Used externally as a caustic, and in solution, by injection, in *gonorrhœa*. The usual strength of solution employed is one or two grains (.066–.133 gram) to an ounce (32 grams) of water.

ZINC, OXIDE OF.—Internally, oxide of zinc is chiefly employed in *nervous diseases*, as *epilepsy*, *chorea*, *spasmodic asthma*, and *delirium tremens*.

Externally it is an excellent application to *burns* and *scalds*, *chafings*, *cracked nipples*, and *moist eruptions of the skin*. In many of these cases the ointment of the oxide of zinc is the very best application which can be used.

ZINC, PHOSPHIDE OF.—Used chiefly in *nervous diseases*, as *neuralgia*, *hysteria*, and *general paralysis*. Has also been recommended in *chlorosis*, *anæmia*, *scanty* and *profuse menstruation*. Dose, one sixteenth to one eighth of a grain (.004–.008 gram) given in pill.

ZINC, SULPHATE OF (*White vitriol*).—Externally it is used as a stimulant and astringent. A solution of one or two grains (.066–.133 gram) in an ounce (32 grams) of water is frequently used locally in *conjunctivitis*, and as an injection in *gonorrhœa*. Often used also as an application to indolent *ulcers* and *sores*. Internally it is used as an *emetic*, to empty the stomach of indigestible substances, and also of poisons, as opium and its preparations, *belladonna*, *stramonium*, *strychnia*, etc. It acts very promptly in the dose of ten to thirty grains (.666–2 grams), frequently repeated.

ZINC, VALERIANATE OF.—This is supposed to combine the valuable properties of valerian with those of the oxide of zinc. It is used in *nervous headache*, *neuralgia*, *whooping-cough*, *hysteria*, *chorea*, etc.

Dose: one half to two grains (.033–.133 gram), given in pill.

MATERIA MEDICA.—ADDENDA.

MARSH ROSEMARY (*Statice Limonium*). Plate P.—Marsh rosemary root is powerfully astringent, and may be used with success in all cases where catechu and kino are indicated. It should be given in infusion or decoction.

RASPBERRY (*Rubus occidentalis*). Plate U.—Raspberry root possesses essentially the same properties as blackberry root, though probably less active. As an astringent the decoction may be used in *diarrhœa*.

POMEGRANATE (*Punica granatum*). Plate S.—Pomegranate rind is a powerful astringent, possessing also anthelmintic properties. It is employed as a gargle in relaxed conditions of the *throat*, and in the treatment of *chronic diarrhœa*, *leucorrhœa*, etc.

The root of the bark possesses the same properties, and may be used for the same purposes.

TEA (*Camellia thea*). Plate T.—The ordinary effects of tea are too well known to require description, and will not be dwelt upon here. A strong infusion of green tea is sometimes used for its astringent properties in *gonorrhœa*, *leucorrhœa*, *conjunctivitis*, etc.

ONION (*Allium cepa*). Plate C.—The onion is stimulant, diuretic, expectorant, and rubefacient. A syrup made by boiling onions with water and sugar is useful in the catarrhal troubles of infants. Roasted and bruised onions form excellent poultices for abscesses. The core of a roasted onion introduced in the ear will often relieve earache. Bruised onions may be usefully employed in some cases instead of mustard as a rubefacient.

GARLIC (*Allium sativum*), Plate I, has nearly the same properties as the onion.

SANDAL-WOOD (*Pterocarpus santalinus*, Red-saunders). Plate S.—Red-saunders has no medicinal properties, but is used as a coloring agent.

The oil of white sandal-wood (*Santalum album*) is a valuable medicine in the treatment of *gonorrhœa*. It may be given in doses of ten or twenty drops three times a day.

EUPHORBIA (*Euphorbia resinifera*). Plate Q.—Taken internally, euphorbium is emetic and violently cathartic. It was formerly much used as a drastic cathartic in dropsy, but it has been superseded by milder and safer remedies. Applied externally it causes vesication. It is seldom employed except in veterinary practice.

LUNGWORT (*Pulmonaria officinalis*). Plate Q.—An herbaceous perennial, whose leaves have a mucilaginous and slightly astringent taste. The infusion is sometimes used as a demulcent in catarrhal affections.

SAFFRON (*Crocus sativus*). Plate M.—Saffron is a stimulant aromatic. The decoction is often used in domestic practice in the early stages of eruptive diseases like measles, scarlet fever, etc.

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MEDICAL DICTIONARY OR GLOSSARY.

NOTE.—In the pronunciation of the following words, Webster has been followed as authority.

In several cases the words have been re-spelled according to the pronunciation, in which cases it is given in parenthesis, thus, ().

AB-DO'-MEN. The belly, or the lower part of the body below the diaphragm.

AB-LU'-TION. Cleansing by water, washing of the body externally.

AB-NOR'-MAL. Unnatural; not according to rule; irregular.

A-BOR'-TION. Birth of a child before the proper time.

A-BRA'-SION. A superficial wound produced by the rubbing off of the skin.

AB-SORB'-ENT. Glands and vessels which absorb or suck up substances from within or without; also medicines which absorb, or combine with acid matter in the stomach or bowels.

AC-COUCH-EUR' (ak-koosh-ur'). A man who attends women in childbirth.

AC-E-TAB'-U-LUM. The socket that receives the head of the thigh bone.

A-CHO'-LI-A. Deficiency of bile.

A-CID. Acid; sour, sharp, pungent, bitter or biting to the taste.

AC'-TUAL CAU-TER-Y. Burning or searing with a hot iron; used in surgery.

AC-U-PUNC'-TURE (ak-u-punk'-ture). Pricking with needles; one of the operations of surgery.

A-CUTE'. Diseases of short duration, attended with violent symptoms; the reverse of chronic.

AD-HE'-SIVE. Tenacious, sticky, apt or tending to adhere.

AD-HE'-SIVE PLAS-TER. Sticking-plaster.

AD'-I-POSE. Matter, membrane or tissue; fat.

AD'-JU-VANT. A substance added to a prescription to aid the operation of the principal ingredient.

A-DULT' AGE. A person grown to full size or strength; manhood or womanhood.

AF-FEC'-TION. Disorder, disease, malady.

AL-BU'-MEN. The white of an egg. It is an essential constituent of animal bodies.

AL-BU'-MI-NOSE. A substance produced in the stomach during digestion.

AL'-I-MENT. Nourishment, nutrition; anything necessary for the support of life.

- AL-I-MENT'-A-RY CA-NAL. The tube by which aliments are conveyed through the body ; it is composed of the mouth, pharynx, esophagus, stomach, and intestines.
- AL'-KA-LI (li or le.) A substance which, when united to acids, neutralizes them.
- AL'-TER-A-TIVE. A remedy which slowly changes the condition of the system.
- AL'-VE'-O-LAR. Relating to the sockets of the teeth.
- AL'-VINE. Relating to the intestines.
- AM-AUR-O'-SIS. A loss or decay of sight, produced by various causes.
- A-MEL'-I-O-RA'-TION. Becoming better ; improvement in the stages of a disease.
- AM-EN-OR-RHE'-A. An obstruction of the menstrual discharges.
- AM-NI-OT'-IC LIQUID. The fluid surrounding the fœtus in the womb.
- AM-PU-TA'-TION. The operation of cutting off a limb or other part of the body.
- A-NA-SAR'-CA. A dropsy of the whole body ; a general dropsy.
- A-NAS'-TO-MOSE. To communicate with each other ; applied to arteries and veins.
- A-NAT'-O-MY. Study of the structure of the body.
- AN-CHY-LO'-SIS (ank-y-lo'-sis). Stiffness of the joint.
- AN-EM'-I-A. Poverty of blood ; a comparatively bloodless state.
- AN-ES-THE'-SIA. Numbness or paralysis of sensation.
- AN'-EU-RISM. A soft tumor, caused by the rupture of the coats of an artery.
- AN-I-MAL'-CULES. Animals so small as to be visible only with a microscope.
- AN'-O-DYNE. Any medicine which allays pain and induces sleep.
- ANT'-A-CID. A substance which neutralizes acids ; alkalies are ant-acids.
- AN'-THEL-MIN-TIC (an'-thel-min-tik). A medicine that destroys worms.
- AN'-THRAX. A dusky red or purplish kind of tumor, occurring in the neck.
- AN-TI-BIL'-IOUS (an-ti-bil'-yus). A medicine counteractive of bilious complaints.
- AN'-TI-DOTE. A protective against, or remedy for, poison or any disease.
- AN-TI-DYS-ENTER'-IC (an-ti-dys-in-ter'-ik). A remedy for dysentery.
- AN-TI-E-MET'-IC (an-ti-e-met'-ik). A remedy to check or allay vomiting.
- AN-TI-LITH'-IC (an-ti-lith'-ik). A medicine to prevent or remove urinary calculi or gravel.
- AN-TI-MOR-BIF'-IC. Anything to prevent or remove disease.
- AN-TI-SCORBU'-TIC. A remedy used for the scurvy.
- AN-TI-SEP'-TIC (an-ti-sep'-tik). Whatever resists or removes putrefaction or mortification.
- AN-TI-SPAS-MOD'-IC. Medicines which relieve cramps, spasms, and convulsions.
- A-NUS. The orifice of the alimentary canal, of which it is the outlet.
- A-OR'-TA. The great artery from the heart.
- AP'-A-THY. Insensibility to mental or bodily pain.
- A-PE'-RI-ENT. A mild purgative or laxative.

- A'-PEX. The top or summit.
- A-PHA'-SI-A. A lack of the power of speech, caused often by an attack of apoplexy.
- A-PHO'-NIA. A loss of the voice.
- AP'-PE-TITE. A desire for food or drink.
- A-RO'-MA. Agreeable odor of plants and other substances.
- AR-O-MAT'-IC. A fragrant, spicy medicine.
- AR'-TE-RY. A vessel that conveys the blood from the heart to the organs.
- AR-THRO'-DI-A. A joint movable in every direction.
- AR-TIC-U-LA'-TION. The union of bones with each other, as at the joints.
- AR-TIC'-U-LATED. Having joints.
- AS-CAR'-I-DES. Pinworms or threadworms found in the lower portion of the bowels.
- AS-CI'-TES. Dropsy of the abdomen.
- AS-PHYX'-IA. Suspended animation ; apparent death, as from drowning.
- AS-SIM-I-LA'-TION. The process by which the food is changed into tissue.
- AS-THEN'-IC. Debilitated.
- AS-TRIN'-GENT. A medicine which contracts or puckers up the tissues of the body, thereby checking discharges.
- AT'-O-NY. Debility ; want of tone ; defect of muscular power.
- AT'-RO-PHY. A wasting of flesh and loss of strength without any sensible cause.
- AT-TEN'-U-ANTS. Medicines for reducing the body.
- AU'-RI-CLE. A cavity of the heart.
- AUS'-CUL-TA'-TION. The art of detecting disease by listening to the sounds of the lungs, heart, etc.
- AX-IL'-LA. The armpit ; hence axillary, pertaining to the armpit.
- AX'-IL-LA-RY GLANDS. Situated in the armpit, secreting a fluid of peculiar odor.
- BAL-SAM'-ICS. Medicines employed for healing purposes.
- BI-EN'-NI-AL. Continuing alive for two years.
- BILE or GALL. A fluid secreted by the liver, which promotes digestion.
- BLIS'-TER. A thin watery bladder on the skin.
- BOU'-GIE (boo-zhē'). A taper body introduced into a passage or sinus to keep it open or enlarge it.
- BRIGHT'S DISEASE. A serious disease of the kidneys.
- BRON'-CHI-AL. Pertaining to the branches of the windpipe in the lungs.
- BUL'BOUS. Round or roundish.
- CA-CHEX'-Y (ca-kěks'-y). A bad state of the body. It may be caused by blood poisons.
- CAL'-CU-LI. Gravel and stone found in the kidneys and bladder.
- CAL'-LOUS. Hard or firm.
- CA-LOR'-IC. Heat.
- CAP'-IL-LA-RY. Fine, hair-like.
- CAP'-SULE. A dry hollow vessel containing the seed or fruit.

CAR'-BON. Charecoal.

CAR-BON'-IC ACID GAS. A gas of two parts of oxygen and one part of carbon.

CA'-RI-ES. Ulceration of a bone.

CAR-MIN'-A-TIVES. Medicines which allay pain by expelling wind from the stomach and bowels.

CA-ROT'-ID ARTERY. The great arteries of the neck that convey blood to the heart.

CAR'-TI-LAGE. A hard elastic substance of the body ; gristle.

CAT-A-ME'-NI-A. The menses, or monthly discharges of women.

CAT'-A-PLASM. A poultice.

CA-TARRH' (ka-tär'). A discharge from the head or throat.

CA-THAR'-TIC. Purgative ; a medicine that cleanses the bowels.

CATH'-ETER. A curved instrument introduced into the bladder through the urethra for drawing off the urine.

CAUS'-TIC. Burning ; a substance which burns or corrodes living tissues.

CAU'-TER-Y. A burning or searing any part of the animal body.

CELL. A small elementary form found in vegetable and animal tissue.

CER'-E-BEL'-LUM. The lower and back part of the brain.

CER'-E-BRAL. Relating to the brain.

CER'-E-BRUM. The upper and front part of the brain.

CER'-E-BRO-SPI'-NAL. Pertaining to the brain and spinal cord.

CE-RU'-MEN. The ear wax.

CHA-LYB'-E-ATE (kā-lib'-ē-ate). Containing iron in solution, as occurring in mineral springs.

CHAN'-CRE (shank'-er). A venereal or syphilitic sore.

CHOL'-A-GOGUES. Medicines that increase the flow of bile, as calomel and podophyllin.

CHOL'-ER-IC (kol'-er-ic). Easily irritated ; irritable.

CHOR-DEE'. A painful drawing up of the penis. It occurs in gonorrhea.

CHRON'-IC. Continuing for a long time, and becoming a fixed condition of the body.

CHYLE (kīl). A milky fluid, separated from the aliment in the intestines, mixing with and forming the blood.

CHYME (kīm). The pulp formed by the food after it has been for some time in the stomach, mixed with the gastric secretions.

CI-CA'-TRIX. A scar that remains after a wound.

CIR-CU'-LA'-TION. The motion of the blood, which is propelled by the heart through the body.

CLAV'-I-CLE (klāv'-i-kl). Collar-bone.

CLI'-MAC'-TER-IC. A term generally applied to the time at which the menses finally cease.

CLYS'-TER. An injection ; a liquid substance thrown into the lower intestine.

CO-AG'-U-LA'-TION. A change from a fluid to a solid condition, as in the coagulation of the blood.

CO-AG'-U-LUM. A clot of blood.

CO-A-LESCE' (kō-a-lēs'). To grow together ; to unite.

COL-LAPSE'. Sudden failure or prostration of the vital functions.

COL-LIQ'-UA-TIVE (kol-lik'-wa-tiv). Excessive discharges from the body which weaken the system.

- Co'-LON. A portion of the large intestine.
 Co-LOS'-TRUM. The earliest secretion of milk.
 Co'-MA, Com'-A-TOSE. Lethargy ; disposed to sleep ; stupor.
 Com'-PRESS. Several folds of linen rags ; a bandage.
 CON-CUS'-SION (kon-kush'-un). A violent shock, as of the brain.
 CON'-FLU-ENT. Running together.
 CON-GEN'-I-TAL. From birth, or born with.
 CON-GES'-TION (kon-jěst'-yun). Distention of any part by an accumulation of blood.
 CON-JUNC'-TI-VA. The membrane which lines the eyelid and covers the eye.
 CON-STI-PA'-TION. Costiveness ; obstruction or hardness of the contents of the intestines.
 CON-TA'-GIOUS. Catching, or that may be communicated by contact.
 CON-TU'-SION. A bruise.
 CON-VA-LES'-CENCE. Gradual return to health after sickness.
 CON-VUL'-SIONS. Involuntary and violent movements of the body.
 COR'-DIAL. A medicine that mildly stimulates and raises the spirits.
 COR'-NE-A. The transparent membrane in the forepart of the eye.
 CORPSE. The dead body of a human being.
 COR-ROB'-O-RANTS. Tonics or strengthening medicines.
 COR-RO'-SIVE. Substances that consume or eat away.
 COUN'-TER-IR-RI-TA'-TION. Drawing disease from one part by irritating another part.
 CRA'-NI-UM. The skull.
 CRI'-SIS. The turning-point of a disease.
 CRU'-DI-TY. Rawness ; indigestion.
 CU-TA'-NE-OUS. Pertaining to the skin, as cutaneous diseases.
 CU'-TI-CLE (kū'-ti-kl). The outer or scarf skin.
 CYST. A bag or sac containing matter or other fluid.
- DE-BIL'-I-TY. Weakness.
 DE-COC'-TIONS (dē-kok'-shuns). Medicines prepared by boiling.
 DEG-LU-TI'-TION. The act of swallowing.
 DEL-E-TE'-RI-OUS. That which is hurtful.
 DE-LIQ'-UI-UM (dē-lik'-we-um). Fainting.
 DE-LIR'-I-UM. Wildness or wandering of the mind.
 DE-MUL'-CENTS. A mucilaginous medicine which soothes diseased mucous membranes.
 DEN-TI'-TION. Teething.
 DE-OB'-STRU-ENT. A mild laxative ; an aperient.
 DE-PLE'-TION. Diminution of the quantity of blood by blood-letting or other process.
 DEP'-U-RATION. Cleansing from impure matter.
 DERM. The natural tegument or covering of an animal.
 DES-QUA-MA'-TION. Separation of the skin in scales ; scaling off.
 DE-TER'-GENT. A medicine that cleanses from offending matter.
 DI-AG-NO'-SIS. The act of distinguishing diseases by symptoms.
 DI-A-PHO-RET'-ICS. Medicines which promote perspiration or sweating.
 DI'-A-PHRAGM (dī'-a-fram). The muscular division between the chest and abdomen.
 DI-ATH'-E-SIS. Tendency of the body to any form of disease, as scrofulous diathesis.

- DI-E-TET'-IC. Relating to diet or regimen.
- DIL-A-TA'-TION. Act of expanding or spreading in all directions.
- DIL'-U-ENTS. That which thins, weakens, or reduces the strength of liquids.
- DI-LUT'-ING. Weakening.
- DIS-CU'-TIENTS. Medicines which scatter a swelling or tumor, or any coagulated fluid or body.
- DIS-IN-FEC'-TANTS. Articles which cleanse or purify infected places.
- DIS-LO-CA'-TION. The displacement of a bone out of its socket.
- DIS-PO-SI'-TION. Tendency.
- DI-U-RET'-IC. A medicine which promotes the flow of urine.
- DOR'-SAL. Pertaining to the back.
- DRAS'-TICS. Active or strong purgatives.
- DY-O-DE'-NUM. The first of the small intestines.
- DYS'-CRA-SIA. A bad habit of body producing generally a diseased condition of the system.
- DYS-PEP'-SIA. Indigestion or difficulty of digestion.
- DYS-PHA'-GI-A. Difficulty of swallowing.
- DYSP-NŒ'-A. Difficulty of breathing.
- DYS-U'-RI-A. Difficulty in discharging urine, attended with pain and heat.
- EB-UL-LI'-TION. The motion of a liquid by which it gives off bubbles of vapor as in boiling.
- EF-FER-VES'-CENCE. The escape of gas from a fluid, as in the so-called "soda-water."
- EF-FLO-RES'-CENCE. Eruption or redness on the skin, as in measles, scarlet fever, etc.
- EF-FLU'-VI-A. Exhalations from substances, as from flowers or decaying matter.
- EF-FU'-SION. An escape of the fluids of the body from their natural position into the tissues or cavities of the body.
- E-LEC-TRI-ZA'-TION. Medical use of the electric currents.
- E-LEC'-TU-ARY. Medicines mixed with honey or syrup.
- E-LIM-I-NA'-TION. Discharged from the body, as by the pores of the skin.
- E-MA-CI-A'-TION. Wasting away of the flesh.
- EM'-BRY-O. The early stage of the fœtus.
- EM'-E-SIS. Vomiting.
- E-MET'-ICS. Medicines given to cause vomiting.
- EM-MEN'-A-GOGUE. A medicine which promotes the menstrual discharges.
- E-MOL'-LI-ENT. A softening application which allays irritation.
- E-MUL'-SION. A mixture; as oil and water mixed with mucilage or sugar.
- EN-AM'-EL. The outside covering of the teeth.
- EN-CEPH'-A-LON. The whole of the brain.
- EN-CYST'-ED. Enclosed in a cyst or sac.
- EN-DEM'-IC. A disease peculiar to a certain district.
- E-NE'-MA. An injection.
- EN-ER-VA'-TION. A loss of nervous tone and reduction of strength.
- EN-TE-RI'-TIS. Inflammation of the bowels.

- EN-TO-ZO'-A. Intestinal worms living in some part of an animal body.
- E-PHEM'-E-RAL. Of short duration.
- EP-I-DEM'-IC. A disease that prevails.
- EP-I-DERM'-IS. The scarf-skin ; the cuticle.
- EP-I-GAS'-TRIC. Pertaining to the upper and anterior part of the abdomen.
- EP-I-GLOT'-TIS. A leaf-shaped cartilage, whose use is to prevent food or drink from entering the larynx and obstructing the breath while eating.
- EP-I-LEP'-TIC. Subject to epilepsy or the falling sickness.
- E-PIPH'-O-RA. An overabundant secretion of tears, causing what is termed a watery eye.
- EP I-SPAS'-TIC. An application for blistering.
- EP-IS-TAX'-IS. Bleeding from the nose.
- EP-I-THE'-LI-UM. A layer of cells covering membranes.
- ER'-E-THISM. Morbid energetic action or irritability.
- E-RO'-SION. Eating away ; corrosion.
- ER'-RHINE (er'-rīn). A medicine for snuffing up the nose to promote the discharge of mucus.
- ER-UC-TA'-TION. Belching ; gulping of wind from the stomach.
- E-RUP'-TION. A breaking out on the skin.
- ES'-CHAR (es'-kār). The dead part, killed by caustic or mortification, which falls off.
- ES-CHA-ROT'-IC. Caustic ; an application which sears or destroys the flesh.
- EU-STA'-CHI-AN TUBE (yū-stā'-kī-an). A narrow canal connecting the middle ear and throat.
- E-VAC-U-A'-TION. Movement of the bowels, or passing of urine from the bladder.
- EX-AC-ER-BA'-TION (egz-ās-er-bā'-shun). Increase of severity in a disease.
- EX-AN-THE'-MA. An eruptive disease, with fever, as small-pox, measles.
- EXCI'-SION. Cutting out of a part.
- EX-CIT'-ANT. A stimulant.
- EX-CO'-RI-ATE. To abrade or scrape off the skin in any way.
- EX-CRES'-CENCE. An abnormal or unnatural growth of a part, as a wart or tumor.
- EX-CRE'-TION. Waste matter thrown off from the system, as the perspiration, fæces, etc.
- EX-FO'-LI-ATE. Scaling or peeling off ; separation of decayed from living bone.
- EX-HA-LA'-TION. Emission of vapor, air, gas, etc.
- EX-OS-TO'-SIS. An unnatural growth from a bone ; a bony tumor.
- EX-PEC'-TO-RANT. A medicine which aids the discharge of phlegm from the bronchial tubes or lungs.
- EX-PEC-TO-RA'-TION. Discharge of phlegm, mucus, or saliva from the mouth.
- EX-PI-RA'-TION. The act of breathing out the air from the lungs.
- EX-TRAV-A-SA'-TION. Effusion ; emptying or forcing a fluid out of its proper vessels.
- EX-U-DA'-TION. Perspiration ; the discharge of moisture on the surface of bodies.

- FÆ'-CAL (fe'-kal). Pertaining to the fæces.
- FÆ'-CES (fē'-ceez). The natural discharges from the bowels.
- FAR-A-DIZ-A'-TION. The use of the Faradaic current.
- FAR-I-NA'-CEOUS. Containing starch, as *farinaceous food*, starchy food.
- FAU'-CES. The back part of the mouth, at the entrance of the throat.
- FEB'-RI-FUGE. A medicine which assuages fever and produces perspiration.
- FE'-BRILE. Having the symptoms of fever; feverish.
- FE'-MUR. The thigh-bone. FEMORAL, pertaining to the femur.
- FET'-ID. Having a rank, disagreeable odor.
- FI'-BRINE. Animal matter found in the blood.
- FI'-BROUS. Composed of small threads or fibres.
- FIL'-TER. A strainer.
- FIL-TRA'-TION. Straining.
- FIST'-U-LA. A deep, narrow, crooked ulcer.
- FLAC'-CID (flāk'-sid). Soft and weak, lax, limber; as a flaccid muscle.
- FLAT'-U-LEN-CY, FLA'-TUS. Wind in the stomach and intestines causing uneasiness.
- FLEX'-I-BLE. Easily bent; yielding to pressure.
- FLOOD'-ING. Profuse flow of blood.
- FLUSIL. A sudden flow of blood to the face.
- FLUX. An unusual discharge from the bowels.
- FŒ'-TUS (fē-tūs). The child in the womb.
- FO-MEN-TA'-TION. Bathing by means of flannels dipped in hot water or medicated liquid.
- FOR-MI-CA'-TION. A sensation like the creeping of ants.
- FOR'-MU-LA. A prescription.
- FRACT'-URE. A broken bone.
- FRIC'-TION. The act of rubbing.
- FU-MI-GA'-TION. A vapor raised by burning.
- FUNC'-TION. The work or office performed by any part or organ of the body.
- FUN'-DA-MENT. The seat; the lower extremity of the large intestine.
- FUN'-GUS. A spongy excrescence, as proud flesh.
- GAL-VAN-I-ZA'-TION. Use of the galvanic current.
- GAN'-GLI-ON (gang'-gli-on). An enlargement in the course of a nerve.
- GAN'-GRENE. Mortification or death of a part.
- GAR'-GLE. A wash for the mouth and throat.
- GAS'-TRIC. Belonging to the stomach.
- GAS-TRI'-TIS. Fever or inflammation of the stomach.
- GES-TA'-TION. The period of pregnancy.
- GLAND. A soft body, the function of which is to secrete some fluid.
- GLOT'-TIS. The opening into the windpipe, covered by the epiglottis.
- GLU'-TE-US. A name given to the muscles of the hip.
- GRAN-U-LA'-TION. The healing of a wound or ulcer by the formation of grain-like fleshy masses.
- GRU'-MOUS. Thick; clotted; concretion; as grumous blood.
- GUT'-TUR-AL. Pertaining to the throat.

- HAB'-IT. A particular state or temperament of the body.
 HEC'-TIC. A remitting fever, with chills, heat and sweat.
 HEM-A-TO'-SIS. An excessive or morbid quantity of blood.
 HEM-I-PLE'-GI-A. Paralysis of one side of the body.
 HE-MOP'-TY-SIS. A spitting of blood.
 HEM'-OR-RHAGE. Bleeding; a flow of blood, as from the lungs, nose, etc.
 HEM'-OR-RHOIDS. The piles; tubercles from which blood or mucus is discharged.
 HE-PAT'-IC. Pertaining to the liver.
 HER-BA'-CEOUS (her-bā'-shus). Pertaining to herbs.
 HE-RED'-I-TA-RY. Descended from a parent; inherited.
 HER'-PES. An eruption on the skin, as tetter, ringworm, etc.
 HER'-NI-A. A rupture, and protrusion of some part of the abdomen.
 HU'-MORS (yū'-mors). The fluids of the body.
 HY'-DRA-GOGUE (hy'-dra-gōg). A purgative that produces a watery discharge from the bowels.
 HY'-DRO-GEN. One of the elementary principles, always existing in water, of which it composes the ninth part.
 HY-DRO-PHO'-BI-A. A dread of water; the rabid qualities of a mad dog.
 HY'-GI-ENE. The art of preserving health.
 HY-PER-ES-THE'-SI-A. Excessive and abnormal sensibility.
 HYP-O-CHON-DRI'-A-CAL. Melancholy; very dejected; low-spirited.
 HYP-NOT'-ICS. Medicines which cause sleep.
 HY-PO-DER'-MIC. Under the skin.
 HYS-TER'-IC-AL. Nervous; subject to hysteria.
- I'-CHOR (i'-kor). A thin, watery, and acrid discharge from an ulcer.
 ID'-I-OP'-A-THY. A morbid condition not preceded by any other disease.
- ID-I-O-SYN'-CRA-SIES. Peculiarities of constitution or temperament.
 IL'-E-UM. The lower part of the small intestines.
 IL'-I-AC. Pertaining to the small intestines.
 IM-BE-CIL'-I-TY. Feebleness; weakness of mind or intellect.
 IM-MER'-SION. Plunging under water.
 IN-A-NI'-TION (in-a-nish'-un). Emptiness; weakness; exhaustion.
 IN-CI'-SOR. A front tooth that cuts or divides.
 IN-DIG'-E-NOUS. Native to a country.
 IN-DI-GEST'-I-BLE. Difficult of digestion.
 IN-DIS'-PO-SI-TION. A disorder of health.
 IN-FEC'-TION. Contagion.
 IN-FLAM-MA'-TION. A redness or swelling of any part.
 IN-FU'-SION (in-fū-zhun). Medicine prepared by boiling or steeping.
 IN-GES'-TION (in-jēst'-yun). Throwing into the stomach.
 IN-JEC'-TION (in-jēk'-shun). Liquid sent into some part of the body by means of a syringe.
- IN-OC-U-LA'-TION. Communicating a disease to a person in health by inserting contagious matter in the skin.
 IN-SPI-RA'-TION. Drawing or inhaling air into the lungs.
 IN-SPIS-SA'-TION. Rendering a fluid thicker by evaporation.
 IN-TEG'-U-MENT. A covering; the skin.
 IN-TER-COS'-TAL. Between the ribs.

IN-TER-MIT'-TENT. Ceasing at intervals.
IN-TES'-TINES. The bowels.

JOINT. The junction of two or more bones; articulation.

LAC'-ER-A'-TED. Torn asunder.

LACH'-RY-MAL (läk'-rî-mäl). Pertaining to the tears.

LAC-TA'-TION. Act of nursing, or sucking.

LAN'-CI-NA-TING. Piercing, as with a sharp-pointed instrument; hence lancing pain.

LAN'-GUOR (läng'-gwur). Feebleness, weakness, lassitude of body.

LAR'-YNX. The upper part of the windpipe.

LAX'-A-TIVE. A mild purgative; a medicine that loosens the bowels.

LE'-SION. A rupture or tearing of the flesh; a wound.

LETH'-AR-GY. Unusual or excessive drowsiness.

LEU-COR-RHE'-A. A white or yellowish discharge from the womb.

LIG'-A-TURE. A thread for tying blood-vessels to prevent hemorrhage.

LI-GA'-TION. The art of tying a vessel.

LIN'-I-MENT. A medicated lotion or wash; a soft ointment.

LITH'-ON-TRIP-TIC. A solvent of the stone or gravel in the bladder.

LI-THOT'-O-MY. The operation of cutting for stone in the bladder.

LIV'-ID. Black and blue; of a lead color.

LO'-CHI-AL. Pertaining to discharges from the womb after child-birth.

LUM-BA'-GO. Rheumatic pains in the loins and small of the back.

LUM'-BAR. Pertaining to the loins.

LYMPH (lîmf). A whitish fluid contained by the lymphatic vessels.

LYM-PHAT'-IC (vessels). Fine tubes pervading the body; absorbents.

MAC-ER-A'-TION. Dissolving or softening with water.

MAC'-U-LAR. Colored spots; blemishes.

MA-LA'-RI-A. Bad air; air which tends to cause disease.

MAL-FOR-MA'-TION. A wrong formation or structure of parts.

MA-LIG'-NANT. Virulent; dangerous; tending to produce death.

MAR'-ROW. A soft substance in the bones.

MAS-TI-CA'-TION. The act of chewing.

MAT-U-RA'-TION. The formation of pus or matter in any part of the body.

ME-DUL'-LA OBLONGATA. A nervous mass in the lower part of the brain.

MEN'-SES, MENSTRUATION. The monthly courses of women.

MEN'-STRU-UM. A solvent; any liquid used to dissolve solid substances.

ME-PHIT'-IC. Suffocating; noxious; pestilential.

MET-A-CAR'-PUS. The hand between the wrist and fingers.

ME-TAS'-TA-SIS. A change of disease from one part of the body to another.

MET-A-TAR'-SUS. That part of the foot between the ankle and the toes.

MI-AS'-MA, MIASMATA. Malaria; exhalations from swamps and decaying matter.

MOR'-BID. Diseased; corrupt.

MOR-BIF'-IC. Causing disease.

MU'-CI-LAGE. A glutinous, viscid fluid substance.
 MU'-CUS. The ropy, lubricating, tenacious fluid secreted by the mucous membrane.

MUS'-CLES (mūs'-sls). The organs of motion ; they constitute the flesh.

NAR-COT'-ICS. Medicines that cause sleep, relieve pain, or stupefy.
 NAU'-SE-A (naw'-she-a). Sickness at the stomach, with a desire to vomit.

NE'-GUS. A liquor made of wine, water, sugar, nutmeg, and lemon-juice.

NE-PHRIT'-IC. Pertaining to the kidneys.

NER'-VINE. A medicine that acts on the nerves.

NEU-RAL-GI-A. Pain of a nerve, without apparent inflammation.

NEU-RAS-THE'-NIA. Nervous exhaustion.

NOR'-MAL. Natural, regular.

Nos'-TRUM. A quack or patent medicine.

NU-TRI'-TIOUS (nū-trīsh-us). A substance which nourishes or feeds the body.

OB'-LONG. Longer than broad.

OB-TUSE'. Dull, not acute.

Œ-DE'-MA. A watery swelling.

OL-FAC'-TORY NERVES. The nerves of smell.

O-MEN'-TUM. The caul or covering of the bowels.

OPH-THAL'-MI-A (of-thāl'-mi-a). Inflammation of the eyes.

O'-PI-ATES. Medicines which promote sleep.

OP'-TIC NERVE. The nerve which enters the back part of the eye.

OR-THOP-NŒ'-A. Great difficulty of breathing, caused by disease of the heart or diaphragm or asthma.

Os'-SI-FY. To change flesh or other soft matter into a hard, bony substance.

O'-VATE. Oval, egg-shaped.

O'-VUM. An egg.

OX'-Y-GEN. A gas that forms one fifth of the atmosphere.

PAL'-ATE. The partition separating the cavity of the mouth from that of the nose.

PAL-PI-TA'-TION. Unnatural action of the heart, in which it beats too rapidly and strongly.

PAN-A-Œ'-A. A cure-all ; a universal medicine.

PA-PIL'-LA. A red, elevated point upon the tongue or elsewhere.

PAR-A-CEN-TE'-SIS. Puncturing the chest or abdomen for the purpose of drawing off water.

PA-RAL'-Y-SIS. Palsy ; a loss of the power of motion in any part of the system.

PAR-A-LYT'-IC. One affected with or inclined to palsy.

PAR-A-PLE'-GI-A. Paralysis of the lower half of the body.

PAR'-OX-YSM. A fit of disease taking place periodically.

PAR-TU-RI'-TION. Child-birth.

PEC'-TOR-AL. Pertaining to the chest.

PEL'-VIS. A bony cavity forming the lower part of the trunk of the body.

PEP'-SIN. An important element of the gastric juice.

- PER-I-CAR'-DI-UM. The sac inclosing the heart.
- PER-SPI-RA'-TION. Sweat, insensible evacuation of the fluids through the pores of the skin.
- PER-I-NE'-UM. The space between the anus and testicles.
- PER-I-OS'-TE-UM. A thin, hard membrane covering the bones.
- PER-I-TO-NE'-UM. The membrane lining the abdomen and covering the bowels.
- PE-TE'-CHI-Æ. Purple spots which appear upon the skin in low fevers.
- PHAG-E-DEN'-IC. Corroding ; eating ; applied to ulcers.
- PHI-LAN'-GES. The bones of the fingers and toes.
- PHLEG-MAT'-IC. Abounding in phlegm ; cold ; dull ; sluggish ; heavy.
- PHAR'-YNX. The upper part of the throat.
- PHLO-GIS'-TIC. Inflammatory.
- PITHYS'-IC-AL (tiz'-ik-al). A condition of the system tending to pulmonary consumption.
- PHLEGM (flēm). A stringy mucus of the respiratory and digestive passages.
- PLE'-THOR-IC. Of a full habit of body.
- PLEU'-RA. A membrane that lines the inside of the chest and covers the lungs.
- PLEU'-RI-SY. Inflammation of the pleura.
- PNEU-MO-NI-A (nū-mō-nī-a). Inflammation of the substance of the lungs.
- POL'-Y-PUS. A pear-shaped tumor.
- PRE-SCRIPT'-TION. The formula for the preparation of medicines.
- PROBE. An instrument for examining the depth of a wound.
- PROG-NO'-SIS. The art of foretelling the termination of a disease.
- PROPH-Y-LAC'-TIC. A medicine to prevent disease.
- PTY'-A-LISM (ty'-a-lism). A copious flow of saliva ; salivation.
- PU-BES'-CENT. Covered with down or very short hairs.
- PUL'-MO-NA-RY. Pertaining to or affecting the lungs.
- PULP. A soft mass.
- PULSE. The beating or throbbing of the heart or blood-vessels, especially of the arteries.
- PUN'-GENT. Sharp, piercing, biting, stimulating.
- PUR'-GA-TIVE. A medicine acting on the bowels to loosen them.
- PU'-RU-LENT. Consisting of pus or matter.
- PUS. Yellowish white matter, found in abscesses, etc.
- PUS'-TULES. Elevations of the skin having an inflamed base and containing pus.
- PU-TRES'-CENT. Becoming putrid ; pertaining to the process of putrefaction.
- PY-RO'-SIS. A peculiar disease of the stomach called water-brash.
- REC'-TUM. The termination of the large intestine.
- RE-FRIG'-ER-ANT. Medicines which lessen the heat of the body.
- REG'-I-MEN. The regulation of diet in order to preserve or restore health.
- RES-O-LU'-TION. Dispersion of an inflammation before pus is formed.
- RE-SOLV'-ENTS. Medicines to dissipate inflammation.
- RES-PI-RA'-TION. The process of breathing.
- RE-SUS-CI-TA'-TION. Reviving from apparent death, as drowning.

RET'-I-NA. The semi-transparent, internal nervous tissue of the eye.
 RU-BE-FA'-CIENTS (shents). Applications that cause redness of the skin.
 RU-BIF'-IC. Making red.

SAC'-CHA-RINE (rîn). Sugary ; having the qualities of sugar.
 SA-LI'-VA. The spittle ; the secretions of the salivary glands of the mouth.

SAL-I-VA'-TION. Increase of the secretion of saliva.

SAN'-A-TIVE. Healing, or tending to heal.

SAN'-GUINE (sang-gwin). Abounding in blood, or having the color thereof.

SA'-NI-ES. A thin, often purulent discharge from wounds or sores.

SCAB. A crust formed over a sore in healing.

SCARF SKIN. The outer skin of the body.

SCIR'-RHOUS (skir'-rus). Hard, knotty.

SCOR-BU'-TIC. Pertaining to, or partaking of the nature of scurvy.

SCRO'-TUM. The bag containing the testicles.

SE-CRE'-TION. The separation of any substance from the blood for a special purpose.

SED'-A-TIVE. A quieting medicine which allays irritation and soothes pain.

SED'-EN-TA-RY. Accustomed to, or requiring much sitting ; inactive.

SEM'-I-NAL. Pertaining to or contained in seed.

SE'-ROUS. Thin, watery, like whey.

SE'-RUM. The watery parts of the blood, or of milk.

SI-AL'-O-GOGUES. Medicines that promote the flow of saliva.

SIN'-A-PISM. A mustard plaster.

SIN'-EW (sin'-yñ). That which unites a muscle to a bone.

SLOUGH (slûf). The part that separates from a wound.

SLOUGH'-ING (sluff'-ing). The separation of the dead flesh from a sore.

SO-LU'-TION. A liquid in which a solid substance has been dissolved.

SOL'-VENT. Having the power to dissolve solid substances.

SOR'-DES. The dark matter deposited upon the lips and teeth in low fevers.

SPASM. An involuntary contraction of the muscles.

SPE-CIF'-IC. An infallible remedy.

SPI'-NAL COL'UMN. The back-bone.

SPI'-NAL CORD. The nervous marrow in the spinal column.

SPLEEN. The milt ; it is situated in the abdomen and attached to the stomach.

SQUA'-MOUS (squā-mūs). Scaly ; having scales.

STER'-NUM. The breast-bone.

STER'-TOR. Noisy breathing, as in apoplexy ; snoring.

STER-TO'-ROUS. Snoring.

STIM'-U-LANTS. Medicines that excite.

STO-MACH'-IC. A cordial for the stomach, exciting its action.

STOOL. A discharge from the bowels.

STRAN'-GU-RY. Difficult and painful expulsion of urine.

STRICT'-URE. Unnatural contraction of any passage of the body.

STRU'-MA. Scrofula.

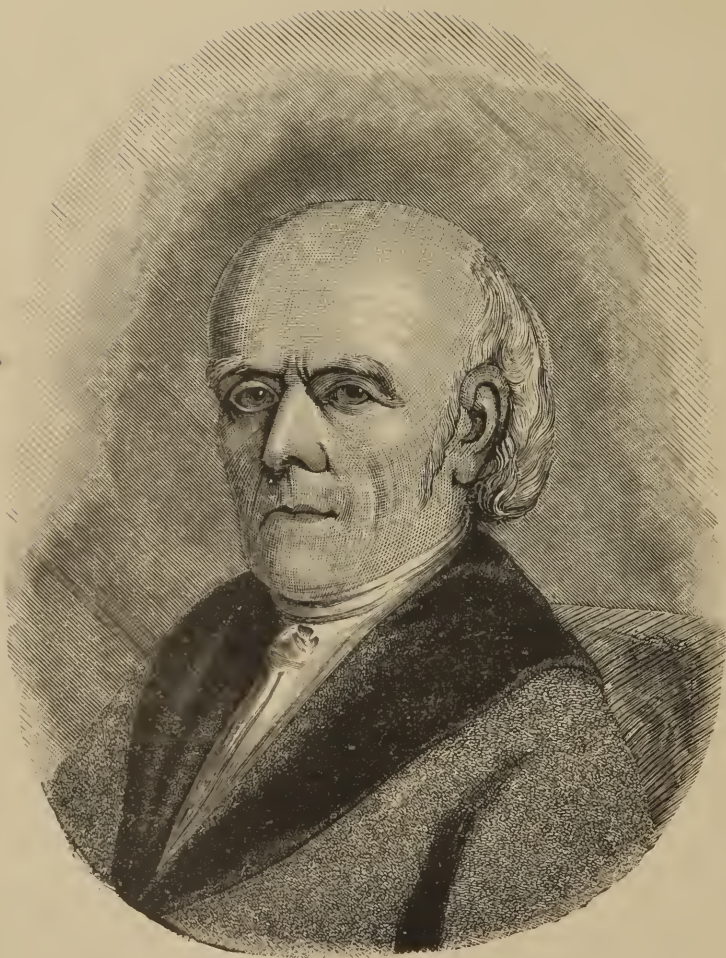
STU'-POR. Insensibility ; numbness.

- STYP'-TIC. A medicine which coagulates the blood, and stops bleeding.
 SUB-CU-TA'-NE-OUS. Under the skin.
 SU-DOR-IF'-ICS. Medicines that cause sweating.
 SUP-POS'-I-TORIES. Medicinal substances introduced into the rectum to favor or restrain evacuations, or to ease pain.
 SUP-PU'-RA-TION. Forming of pus.
 SUT'-URE. The peculiar joint uniting the bones of the skull.
 SYMP'-TOM. A sign or token; the peculiar marks of any disease.
 SYN'-CO-PE. Fainting or swooning.
 SYN'-O-CHA. Inflammatory fever.
 SYPH-I-LIT'-IC. Pertaining to the venereal disease or pox.
 SYR'-INGE. An instrument for injecting liquids into the bowels, ear, throat, or other cavities of the body.

 TEM'-PER-A-MENT. Individual constitution; a peculiar habit of body.
 TEN'-DON. A fibrous cord attached to the extremity of a muscle.
 TE-NES'-MUS. A painful bearing down sensation in the lower bowels.
 TENSE, TENSION. Rigid, hard, stiff; drawn tightly.
 TEP'-ID. Warm, but not hot.
 TER'TIAN (ter-shun). Occurring every other day.
 TES'-TI-CLES. Two glandular bodies situated in the scrotum, belonging to the male organs of generation.
 TET'-A-NUS. Locked jaw.
 TIB'-I-A. The large bone of the leg below the knee.
 TINCT'-URE. Medicine dissolved in alcohol.
 THO'-RAX. The cavity of the chest.
 TO'-MEN-TOSE. Downy; nappy; covered with the finest hairs or down.
 TOR-MI'-NA. Severe griping pains.
 TON'-ICS. Remedies which give tone and strength to the system.
 TON'-SILS. Glands situated on each side of the throat.
 TOR'-PID. Dull, stupid.
 TRA'-CHE-A. The windpipe.
 TRE'-MOR. Involuntary shaking.
 TU'-BER-CLE (tu'-ber-kl). A pimple, swelling, or small tumor.
 TU-ME-FAC'-TION. The act of swelling or forming a tumor.
 TU'-MOR. A distention or enlargement of any part of the body; a swelling.
 TY'-PHOID. Resembling typhus; weak; low.
 TY'-PHUS. A form of low nervous fever, malignant, infectious, etc.

 UL'-CER. A sore, discharging pus.
 UM-BIL'-IC. The navel, or pertaining to the navel.
 U'-REA. A substance found in the urine.
 U-RE'-TER. The duct or tube through which the urine passes from the kidneys to the bladder.
 U-RE'-THRA. The canal of the penis through which the urine passes from the body.
 U'-RINE. Water evacuated from the bladder.
 U'-TE-RUS. The womb.
 U'VU'-LA. The small conical body projecting from the middle of the soft palate.

- VAC'-CI-NATE (vāk'-sin-nate). To inoculate with the cow-pox by inserting the vaccine in the skin.
- VAC'-CINE (vāk'-sin). Belonging to, or matter of, the cow-pox.
- VAG-GE'-NA. The passage that connects the vulva with the womb.
- VAG-IN-IS'-MUS. Spasm of the vagina, caused by morbid irritability.
- VAL-E-TU-DI-NA'-RI-AN. A person of a weak, infirm or sickly constitution.
- VA-RI'-O-LOUS. Pertaining to or denoting small pox.
- VE'-HICLE (vĕ'-hī-kl). A liquor in which to administer medicines.
- VEN'-E-RY. Sexual intercourse.
- VE'-NOUS. Relating to the veins.
- VEN-TI-LA'-TION. A free admission or motion of air.
- VER'-MI-FUGE. A medicine that expels worms.
- VER'-TI-GO. Dizziness ; swimming of the head.
- VES'-I-CA-TING. Blistering.
- VES'-I-CLE (vēs'-i-kl). A little bladder of water formed under the skin.
- VIR'-U-LENT. Extremely injurious ; malignant ; poisonous.
- VI'-RUS. Active, contagious matter.
- VIS'-CE-RA. The internal organ of the body.
- VIS'-CID. Glutinous ; sticky ; tenacious.
- VIT'-RE-OUS HUMOR. One of the fluids of the eye, resembling glass.
- VOL'-A-TILE. Easily evaporated ; substances that waste away on exposure to the atmosphere.
- VUL'-NER-A-RY. Pertaining to wounds.
- VUL-VA. The external parts of the female organs of generation.
- ZY-MOT'-IC. Contagious ; infectious ; such diseases as may be inoculated.



Samuel Hahnemann.

SAMUEL HAHNEMANN, M. D., FOUNDER OF HOMEOPATHY.

BORN IN SAXONY, APRIL 10, 1755. DIED IN PARIS, JULY 2, 1843.

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OUR
HOME PHYSICIAN MANUAL
OF
HOMEOPATHY.

A REPERTORY OF
HOMEOPATHIC TREATMENT AND REMEDIES.

DESIGNED FOR FAMILY USE.

[WRITTEN EXPRESSLY FOR THIS WORK]

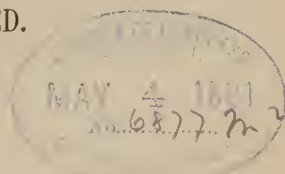
BY
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ALPHABETICALLY ARRANGED.

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LIST OF HOMEOPATHIC MEDICINES PRESCRIBED IN THIS WORK.

In the administration of medicines internally, use from the third to the thirtieth dilution. For external application use from the strong tincture to the third dilution, according to circumstances.

NAME OF MEDICINE.	SYNONYMOUS TERMS.	ABBREVIATIONS.
Acidum hydrocyanic.	Hydrocyanic acid.	Acid. hydro- cyan.
— nitricum.	Nitric acid.	Acid. nit.
— phosphoricum.	Phosphoric acid.	Acid. phos.
— sulphuricum.	Sulphuric acid.	Acid. sulph.
Acid tannicum.	Tannic acid.	Acid tan.
Aconitum napellus.	Aconite; Wolfsbane; Monkshood.	* Acon.
Æsculus hippocastanum.	Horse chestnut.	Æsc.
Agnus castus.	Chaste tree.	Agn. cast.
Ailanthus gland.	Tree of heaven.	Ail. gland.
Aloes.	Aloes.	Aloes.
Alumina.	Argilla pura; Terra alumina.	Alum.
Ammonium carbonicum.	Ammonia subcarbonas; Carbonate of ammonia.	Amm. carb.
Antimonium crudum.	Tersulphuret of antimony; Crude antimony.	Ant. crud.
— tartaricum.	Stibium tartaricum; Tartar emetic.	* Ant. tart.
Apis mellifica.	Tincture of the poison of honey bees.	* Apis.
Argenti nitras.	Nitrate of silver.	Arg. nit.
Arnica montana.	Leopard's bane.	* Arn.
Arsenicum album.	Arsenious acid.	* Ars.
Arsenicum jodaturn.	Iodide of arsenic.	Ars. jod.
Arum triphyllum.	Arisæma triphylla; Indian turnip.	Arum tr.
Aurum metallicum.	Aurum foliatum; Gold.	Aur.
Baryta carbonica.	Barytæ carbonas; Carbonate of baryta.	* Bar. c.
Baptisia tinctoria.	Wild indigo.	Bapt.
Belladonna.	Atropa belladonna; Deadly nightshade.	* Bell.
Benzoic acid.	Flowers of Benzoin.	Benz. ac.
Borax.	Borax veneta; Biborate of soda.	Bor.
Bromium.	Bromine.	Brom.
Bryonia alba.	White bryony.	* Bry.
Cactus grandiflorus.	Cereus grandiflorus; Night-blooming cereus.	Cactus.
Calcareo carbonica.	Calcis carbonas; Impure carbonate of lime.	* Calc.

NAME OF MEDICINE.	SYNONYMOUS TERMS.	ABBREVIATIONS.
Camphora.	Laurus camphora ; Camphor gum.	Camph.
Cannabis.	Hemp.	* Cann.
Cantharides.	Melœ vesicatorius ; Spanish blistering-fly.	* Canth.
Carbo vegetabilis.	Charcoal.	Carb. veg.
Causticum.	Potassæ hydras ; Caustic potash.	Caust.
Cepa.	Onion.	Cep.
Chamomilla.	Matricaria chamomilla ; German chamomile.	* Cham.
Chelidonium.	Celandine.	Chel.
China.	Cinchona ; Peruvian bark.	* Chin.
Cimicifuga racemosa.	Actæa racemosa ; Black cohosh.	Cimicif.
Cina.	Artemisia Judaica ; Wormseed.	Cina.
Clematis.	Virgins' bower.	Clem.
Cocculus.	Cocculus Indicus ; Indian cockle.	Cocc.
Coffea cruda.	Coffea Arabica ; Arabian coffee.	Coff.
Colchicum.	Colchicum autumnale ; Meadow saffron.	Colch.
Colocynth.	Cucumis colocynthis ; Bitter apple.	* Col.
Conium maculatum.	Hemlock.	Con.
Crotalus.	Crotalus horridus ; Virus of the rattlesnake.	Crotal.
Croton tiglium.	Croton oil.	Cro. tig.
Cuprum.	Cuprum metallicum ; Copper.	* Cupr.
Digitalis purpurea.	Foxglove.	Dig.
Dioscorea.	Wild yam.	Diosc.
Drosera rotundifolia.	Sundew.	Dros.
Dulcamara.	Solanum dulcamara ; Bitter-sweet.	* Dulc.
Eupatorium perfoliatum.	Boneset.	Eupat. perf.
Euphrasia officinalis.	Eyebright.	Euphr.
Ferrum metallicum.	Iron.	Ferr.
Filix mas.	Aspidium filix-mas ; Male fern.	Fil. m.
Gelseminum sempervirens.	Bignonia sempervirens ; Yellow jessamine.	* Gels.
Glonoin.	Nitro-glycerine.	Glon.
Graphites.	Ferri supercarburetum ; Plumbago.	* Graph.
Hamamelis.	Hamamelis virginica ; Witch hazel.	Ham.
Helleborus niger.	Helleborus grandiflorus ; Black hellebore.	Hell.
Hepar sulphuris calcareum.	Calcis sulphide.	* Hep.
Hydrastis Canadensis.	Yellow root ; Golden seal.	Hydras.
Hyoscyamus niger.	Hyoscyamus niger ; Henbane.	Hyos.
Ignatia amara.	Strychnos Ignatii ; St. Ignatius' bean.	* Ign.
Iodium.	Iodine.	Iod.
Ipecacuanha.	Cephaelis ipecacuanha ; Ipecac.	* Ipec.
Iris versicolor.	Iris hexagona ; Blue flag.	Iris.
Kali bichromicum.	Potassæ bichromas ; Bichromate of potash.	Kali bich.
— bromatum.	Bromide of potash.	Kali brom.
— carbonicum.	Potassæ carbonis ; Subcarbonate of potash.	Kali carb.
— chloratum.	Chlorate of Potash.	Kali chlor.
— hydriodicum.	Hydriodate of Potash.	Kali hydr.
Kreasotum.	Creasote.	Kreas.
Lachesis.	Trigonocephalus Lachesis, Virus of the.	Lach.

NAME OF MEDICINE.	SYNONYMOUS TERMS.	ABBREVIATIONS.
Lobelia inflata.	Indian tobacco.	Lob. in.
Lycopodium.	Lycopodium clavatum ; Clubmoss.	* Lyc.
Matico.	Soldiers' herb.	Mat.
Mercurius corrosivus.	Hpdargyri oxymurias ; Corrosive sublimate.	* Merc. cor.
— iodatus ruber.	Hydrargyri biniodidum ; Biniodide of mercury.	Merc. iod.
— protojodatus.	Iodide of mercury.	Merc. pro.
— solubilis.	Hydrargyrum oxydulatum nigrum ; Hahnemann's soluble mercury.	* Merc. sol.
Natrum muriaticum.	Sodii chloridum ; Table salt.	* Natr. mur.
Nux vomica.	Strychnos nux vomica ; Quaker button.	* Nux vom.
Opium.	Papaver somniferum ; Concrete juice of the poppy capsule.	Op.
Petroleum.	Rock oil.	Petr.
Phosphorus.	Phosphorus.	* Phos.
Phytolacca decandra.	Phytolacca vulgaris ; Pokeweed.	Phytolac.
Platina.	Platinum metallicum.	Plat.
Plumbum metallicum.	Lead.	Plumb.
Podophyllum peltatum.	May-apple.	* Podoph.
Polygonum.	Water pepper.	Polygo.
Pulsatilla.	Anemone pratensis ; Pasque flower.	* Puls.
Ranunculus bulb.	Buttercup.	Ranunc. b.
Rhododendron chrys.	Rosebay.	Rhod.
Rhus toxicodendron.	Poison oak.	* Rhus.
Ruta graveolens.	Rue.	Ruta.
Sabadilla.	Cevodilla.	Sab.
Sabina.	Juniperus sabina ; Savin.	Sabin.
Sambucus nigra.	Black elder.	Samb.
Santonine.	Santonine.	Sant.
Secale cornutum.	Ergot of rye.	Sec. corn.
Sepia.	Sepiæ pigmentum ; Inky juice of the cuttle-fish.	* Sep.
Silicea.	Oxide of silicon ; Silex.	* Sil.
Spigelia.	Demerara pinkroot.	Spig.
Spongia.	Spongia marina tosta ; Toasted sponge.	* Spong.
Stannum.	Stannum metallicum ; Tin.	Stann.
Staphisagria.	Delphinium staphisagria ; Staves-acre.	Staph.
Stillingia.	Queens' delight.	Stillin.
Stramonium.	Datura stramonium ; Jamestown weed.	Stram.
Sulphur.	Brimstone.	* Sulph.
Terebinthina.	Turpentine.	Terebin.
Teucrium.	Cat thyme.	Teucr.
Thuja occidentalis.	American arbor-vitæ.	Thuj.
Urtica (urens or dioica).	Stinging nettle.	Urt. ur.
Veratrum album.	White hellebore.	* Verat alb.
— viride.	American Hellebore.	* Verat. vir.
Zinci sulphas.	Sulphate of zinc.	Zin. sulph.
Zincum metallicum.	Zinc.	Zinc.

The * indicates a select list of thirty-six medicines, comprised in "Our Home Physician Medicine-Case." Price, .

DOSES.

Homeopathic medicines may be given in—

1. **Globules**, pellets of sugar, saturated with the fluid medicine, which may vary according to the disease and constitution of patient.

Dose: for adults six globules, dry, or dissolved in tablespoonful of water; for children one to four globules according to age.

2. **Tincture**, from the strong mother tincture to high potencies, represents the remedy in a fluid form, and the dose varies according to the disease.

Dose: adults one or two drops in one half glass of water; tablespoonful of the water every hour or two; for children teaspoonful at a dose.

Triturations are made from drugs insoluble in water or alcohol, and are given in powders, or a powder of the trituration may be dissolved in half a glass of water and be given then in the same manner as the tincture.

Dose: one or two grains of the powder (or a quantity equivalent to four or eight globules).

CARE OF MEDICINES.

Let every remedy be carefully marked or labelled.

Keep the case or vials in a dark, dry, and cool place.

Avoid changing corks, or using vials that have contained other remedies.

In administering different remedies great care should be taken that the spoon or tumbler used is perfectly clean.

Keep the medicines under a lock and key, and out of the reach of children.

OUR
HOME PHYSICIAN MANUAL
OF
HOMEOPATHY.

DISEASES; THEIR TREATMENT AND REMEDIES ALPHABETICALLY
ARRANGED.

For causes and symptoms, reference is made in each case to preceding pages.

ABDOMEN, DROPSY OF THE. (See Dropsy.)
ABORTION. (See Miscarriage.)

ABSCCESS.

(Page 463.)

(1.) In the *stage of inflammation*, before suppuration has commenced, **Aconitum**, **Arnica**, **Belladonna**, or **Mercurius** will often arrest the whole process and prevent the formation of pus.

(2.) *When suppuration has set in* give **Hepar Sulphur**, **Silicia**, **Arsenicum**, **China**.

(3.) *After suppuration*, when much fluid has been lost and left the body in a weakened condition, **China**, **Calcareo carbonica**, **Sulphur**, which latter two will also have a tendency to cure the morbid disposition for the habitual forming of abscesses, when given once a day for a week, then stopping the medicine for two weeks and giving it again for a week, one time sulphur, next time calcarea, and so in alternate succession.

LEADING INDICATIONS.

Aconitum.—Heat and redness of the parts with much pain and general *feverish* symptoms, restlessness, and thirst, before any signs of suppuration; or if fever occurs during any other stage of the disease, it may be given in alternation with the specially indicated remedy.

Arnica.—Much swelling and shining redness of the affected part; but less heat and general fever than in *Aconitum*. Will most always prevent suppuration when given in time.

Arsenicum.—Severe *burning pain*, with symptoms of general *vital depression*. Abscesses have a gangrenous appearance, or discharge pus tinged with blood.

Belladonna.—*Severe pains*, mostly of a stinging character: *headache*, with rush of blood to head; sleeplessness.

Calcarea carbonica.—This remedy assists the healing of the abscess after suppuration is completed and the elimination of disease from the constitution.

China.—Abscesses following prolonged disease (as in bed-sores, etc.); prostration from *excessive discharge of matter or blood*. It greatly sustains the constitution also during suppuration.

Hepar Sulphur.—This remedy is the best for *promoting suppuration* in acute abscesses, and will generally be sufficient when the discharge consists of creamy-looking healthy pus.

Mercurius.—When the discharge is very copious and thick, the abscess remaining painful *with marked nocturnal aggravations*; general chilliness with thirst; *night sweats*.

Silicia.—Tardy, *long-continued*, or *unhealthy* thin discharge; chronic abscesses and *abscess of bone*. It facilitates suppuration, or moderates it when excessive. Will be very serviceable after *Hepar Sulphur* to hasten the healing process.

Sulphur.—In scrofulous constitutions, with unhealthy skin and a tendency of every little cut to become inflamed and suppurate, or where abscesses form again and again, this remedy used as described above will improve the general health greatly.

DOSE.—In *acute* abscesses, dissolve ten globules or one drop of the tincture in six tablespoonfuls of water, and take a dessert-spoonful every two to four hours. In *chronic* abscesses, take a drop or ten globules in a tablespoonful of water morning and evening, and lengthen the intervals as improvement goes on.

ACHOLIA. Deficiency of bile. See Liver, Diseases of.)

ACNE—PIMPLES—BLACKHEADS.

(Page 468.)

Mercurius solubilis is indicated when the nodules do not suppurate, but have a bluish-red appearance, covering themselves afterwards with small scales.

Phosphorus, if the former remedy fails to act favorably.

Hepar sulphuris when suppuration sets in, also in the pustular form.

Iodine or **Conium** is required when the nodules are hard and indurated.

Sulphur, **Carbo vegetabilis**, **Silicia**, and **Rhus toxicodendron** may also be required.

DOSE.—Six globules or one drop of the tincture in a table-spoonful of water every night and morning for four days, then six days' intermission without medicine, again, medicine for four days as above, and this continued until improvement begins, when all treatment should be stopped.

AGUE—CHILLS AND FEVER—MALARIAL OR INTERMITTENT FEVER.

(Page 469.)

The real *curative* treatment must be commenced *after the attack proper*. It is best to give *no medicine at all during the attack*.

In recent cases, especially in swampy districts, give **China** or **Chin.-Sulph.**, **Ipecacuanha**, **Arsenicum**, **Eupatorium perfoliatum**.

If the patient has taken large doses of *quinine* or some preparation of it without receiving any benefit or having aggravated his condition, give **Natrum muriaticum**, **Ipecacuanha**, **Arsenicum**, **Carbo vegetabilis**. In other cases prescribe **Carbo vegetabilis**, **Nux vomica**, **Pulsatilla**, **Cina**, each according to its special indication.

Against ailments remaining afterwards, as, (1) *Enlarged spleen* (Ague-cake): **Mercurius bijod**, **Natrum muriaticum**; (2) *Deranged liver*: **Mercurius**, **Phosphor**; (3) *Prostration*: **Phosphori acidum**.

LEADING INDICATIONS.

Arsenicum.—Chronic ague, when the stages are not clearly marked, or the heat and chill appear intermingled, or internal shivering with external heat; *burning heat*; *insatiable thirst* for small quantities of water often repeated; *great debility*; tenderness of liver and spleen; *violent pains in stomach*; nausea; *great anxiety*; *dropsical tendency*. Also after abuse of *China*.

Carbo vegetabilis.—The cold stage is very severe and lasting; burning heat in chest; attacks mostly between sunset and sunrise; in chronic cases; quinine cachexia (dumb ague).

China.—Recent cases, especially in swampy districts; paroxysms clearly marked. *Yellowish complexion*; drowsiness after a meal; sinking, empty sensation, without real hunger, which is easily satisfied; soreness or *swelling of liver and spleen*; extremely sensitive to currents of air; mental depression and irritability.

Eupatorium.—Patient feels thirsty already *before* the chill; he also has bone pains and cough in the apyrexia. Paroxysm commences in the morning; great pain and distress in the pit of the stomach during the heat and chill; pungent heat or coldness during the sweat.

Ipecacuanha.—Nausea, vomiting, and other *gastric symptoms* before and during the attack; thickly-coated yellowish fur on the tongue; great oppression of the chest. Acts well in recent cases of after-abuse of quinine.

Cina.—Intermittents accompanied by *voracious hunger*; *pale face* during chill and *heat*; very awkward and *angry disposition*; also in *children* appearing *to have worms*.

Natrum muriaticum.—Chronic ague; *bilious vomiting* before and during the chill; great thirst, *blistered lips*, *fever-sores about the mouth*. Attacks coming on during the forenoon.

Nux vomica.—*Bilious constitutions*. Attacks coming in the afternoon; patient does not feel well between the attacks; nausea, vomiting, a constipated condition of the bowels, *where there is much urging to stool without effect*; piles. Feeling of *chilliness at the least uncovering*; the hot stage is most severe.

Phosphorus.—In liver complaints after intermittents, also in bronchial affections during or after the attacks, which are marked by very severe chills.

Pulsatilla.—Chills mostly in the evening; pale face; *thirstlessness*; suited mostly for females with *scanty menses*. Gastric disturbance, *bitter taste*; after abuse of quinine.

DOSE.—One drop or ten globules in six tablespoonfuls of water; of this take, when the chills occur daily, a *dessert-spoonful every hour*; when occurring every third day, the same quantity *every two hours*; when every fourth day, the dose *every three hours*. Take the medicine *only between the attacks*.

AMENORRHEA. Suppression of the monthlies. (See Menstruation.)

AMNESIA. Loss of memory of words. (See Apoplexy.)

ANEMIA.

(Page 482.)

(1.) *From loss of animal fluids:* **China, Phosphoric acid, Calcareo carbonica.**

(2.) *With scanty or suppressed menses:* **Pulsatilla, Ferrum.**

(3.) *From deficient open-air exercise and sunlight:* **Ferrum, Nux vomica, Pulsatilla.**

LEADING INDICATIONS.

Calcareo carbonica.—Females with *profuse menstruation*; serofulous constitutions, inclined to be fat; abdomen bloated; *dizziness* from walking *upstairs*.

China.—After severe *loss of blood, exhausting diarrhoea*, or *excessive suppuration*. Great general weakness; want of appetite, etc.

Ferrum.—In *simple* anemia without other symptoms from any cause whatever. This remedy is abused to a great extent, and patients ought to be very careful about using iron mixtures or pills, as cases have been rendered incurable by its wrong use.

Pulsatilla.—Females with *mild, tearful disposition and scanty menses; constant chilliness; gastric symptoms; headaches; feeling worse in the evening; after abuse of iron.*

Phosphoric acid.—Anemia after loss of *seminal fluid* by onanism or nocturnal pollutions.

DOSE.—One drop or ten globules in water, twice a day, for four days, then once a day only, and less after improvement sets in.

ANGINA PECTORIS (BREAST-PANG).

(Page 486.)

The chief object must be to cure the diseased condition, which should not be attempted by any person who is not thoroughly acquainted with the examination of the heart.

The chief remedies are **Arsenicum, Phosphorus, Cuprum, Digitalis.**

The paroxysm may be treated by **Aconitum**, **Arsenicum**, **Cactus grandiflorus**, **Cuprum**, **Nux vomica**, **Sambucus**, **Veratrum**.

LEADING INDICATIONS.

Aconitum.—Recent cases and for plethoric patients ; when there is great sense of suffocation, anxiety, fear of death ; throbbing.

Arsenicum.—Extreme difficulty of breathing, increased by the slightest movement ; marked debility, pale and haggard face, feeble and irregular pulse, and dread of immediate death. *Arsenicum* may also be taken in the mean time as an agent for warding off the paroxysms.

Cactus grandiflorus.—Intense feeling of *constriction*, as if the heart were compressed by an iron hand ; rheumatism.

Cuprum.—Boring pain in region of heart ; pulse tense, hard, thread-like ; spasmodic tendency.

Nux vomica.—Indigestion, the attacks being attended and followed by flatulence.

Sambucus.—Intense difficulty in breathing ; awaking from sleep with a suffocative sensation and dreadful anguish about the heart.

Veratrum.—*Cold extremities*, cold perspiration ; slow, intermittent pulse ; sudden sinking of all strength.

DOSE.—One drop or ten globules in six tablespoonfuls of water ; give a *teaspoonful* every five, ten, or fifteen minutes, and in longer intervals after improvement has set in.

APOPLEXY.

(Page 487.)

(1.) For the premonitory symptoms : **Nux vomica**, **Aconitum**, **Belladonna**.

(2.) During the attack : **Aconitum**, **Belladonna**, **Opium**.

(3.) Paralysis following : **Aconitum**, **Belladonna**, **Phosphorus**, **Rhus toxicodendron**.

LEADING INDICATIONS.

Aconitum.—Full, rapid, and strong pulse ; dry, hot skin. This remedy is suitable for the premonitory symptoms and for an actual attack, and both immediately and remotely is infinitely superior to the abstraction of blood ; indeed, blood-letting has been proved by statistics to increase mortality.

Belladonna.—Red, swollen face; throbbing of the blood-vessels; convulsive movements of the face or limbs; *dilatation of the pupils*; loss of speech; suppression or involuntary discharge of urine.

Nux vomica.—Congestive condition of the brain, favoring apoplexy. Even when effusion has taken place it is often the best remedy, unless active febrile symptoms call for aconitum. *Nux* is particularly indicated when patients have spent a sedentary life and indulged in rich diet and *stimulating drinks*.

Opium.—*Drowsiness, stupor, or profound sleep*; stertorous and irregular breathing; bloated face, stupid and besotted expression, half-open eyes, *contracted pupils*; cold extremities.

Phosphorus.—This remedy retards or corrects the *calcareous degeneration* of the arterial blood-vessels, which are generally the great cause of the disease. It may be given when such a change is suspected, and also during recovery from a fit of apoplexy from that cause.

Rhus toxicodendron.—Paralysis following apoplexy; perfect loss of power in the limbs; tingling and shooting pains in the parts, with emaciation.

DOSE.—One drop or ten globules in six tablespoonfuls of water. Give a teaspoonful every five to fifteen minutes, and where the patient cannot swallow, place five globules on the tongue in the same intervals of time. In convalescence use the medicines every three to six hours.

APHTHE—(*Thrush*).

(Page 490.)

Borax has a specific power over this affection, and may be used as directed above, or as a solution of half a drachm (2 grams) to an ounce (32 grams) of *glycerine*. Washing the mouth with this solution will enable the babe to swallow sufficient for a dose.

Arsenicum.—Extension of the eruption to the stomach and bowels; *dark-colored eruption* having an offensive odor; *exhausting diarrhœa*; *great thirst*.

Mercurius.—Offensive breath; *dribbling saliva*; diarrhœa of greenish mucus. If administered when the white specks first appear, it is often alone sufficient.

Sulphur may follow Arsenicum, or if one of the other remedies seems indicated without relieving, as there is a scrofulous condition at the bottom which will be checked by this remedy, after which another one will finish the cure completely.

DOSE.—Dissolve one drop or ten globules in six tablespoon-

fuls of water, and give a *teaspoonful* every two or four hours. It is well for the *mother* or *nurse* to take the same remedy at the same time, and keep from eating acids and spices.

ASTHMA.

(Page 493.)

(1.) *For the attack*: **Aconitum, Cuprum, Ipecacuanha, Lobelia inflata, Veratrum album.**

(2.) *Treatment in the intervals*: **Arsenicum, Nux vomica, Sulphur.**

LEADING INDICATIONS.

Aconitum.—The striking power of this great remedy in affections of the pneumogastric nerve, characterized by imperfect and labored breathing, has suggested its use in *spasmodic asthma*. It is especially indicated by *oppressive anxiety*, difficulty in breathing, and *labored action of the heart*.

Arsenicum.—Short, anxious, wheezing breathing; aggravation of the sufferings *on lying down* and *upon the least movement*; periodic, suffocative attacks, with pale or bluish face. It is especially useful in the aged and feeble and in chronic asthma, *with burning in the chest, cold sweats*, and prostration; also when complicated with heart disease, or following bronchitis or catarrh.

Cuprum.—*Spasmodic asthma*, with convulsive efforts to get breath; face blue; body cold.

Ipecacuanha.—A *tight sensation* in the chest, panting and *rattling in the windpipe*, which feels as if full of phlegm; coldness, paleness, anxiety, and sickness; troublesome cough.

Lobelia inflata.—Pure nervous asthma, with a constrictive, suffocative sensations; spasmodic cough; vomiting; giddiness.

Nux vomica is homœopathic to that condition of the digestive organs which is the most common cause of the irritation which results in bronchial spasm. After the attack the tongue will be coated with a thick yellow fur; there is often slight nausea, flatulence, and constipation. Besides, the breathing is seldom quite right; generally there remains a physical memory of the struggle. The patient feels that no liberties must be taken, either of diet or exercise.

Sulphur.—Chronic asthma apparently connected with gout, skin eruptions, or some other constitutional taint; also after other medicines have but partially succeeded.

Veratrum.—*Violent paroxysms* of *spasmodic asthma*, with coldness of the nose, ears, and feet, *cold perspirations* and great sudden prostration.

DOSE.—Of the solution of one drop or ten globules in six tablespoonfuls of water, give a desertspoonful every ten or fifteen minutes ; afterward the same quantity every three or four hours.

To avoid repetition, one drop or ten globules should be given in a tablespoonful of water every night before retiring, for a week ; then no medicine for a week, and the following week the medicine again every night, etc., keeping a careful diet.

ATAXIA. (See Locomotor Ataxia and Paralysis.)

BILIOUS HEADACHE. (See Headache.)

BILIOUS REMITTENT FEVER. (See Remittent Fever.)

BLADDER, INFLAMMATION OF—(*Cystitis*).

(Page 503.)

Aconitum is ever requisite in the initiatory treatment of this disease, if there be a considerable degree of fever, with hot, dry skin, and quick, hard pulse.

Cantharides.—Violent burning pains in the bladder and urethra before and after urinating ; constant urging to pass water, even if there is but little in the bladder ; dull pains in region of kidneys ; the urine is hot and fiery red and cloudy.

Nux vomica.—When the affection is attributable to an indulgence in wine and spirituous liquors ; this remedy will often cure also when caused from suppressed piles. Constant effort to urinate without effect.

Pulsatilla.—Frequent desire to urinate, with scanty emission of water, either slimy or tinged with blood ; burning and cutting pains in the lower part of the belly ; suppression of urine ; mostly indicated in women with scanty menses and mild, tearful disposition. If there be much nervous irritability, give **Belladonna**.

DOSE.—Dissolve eight globules or one drop in three tablespoonfuls of water, and give a desertspoonful every hour until relief is obtained, then lengthen the intervals at once to three or four hours.

BLEEDING FROM THE LUNGS—HEMORRHAGE.
(See Spitting of Blood, or Hemorrhage from the Lungs.)

BLEEDING FROM THE NOSE.

(Page 505.)

As to the *causes* select the following remedies :

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(1.) When occasioned by *local determination of blood*: **Aconitum, Belladonna, Hamamelis, Rhus toxicodendron.**

(2.) After *being overheated* or having indulged in *fermented liquors*: **Aconitum, Belladonna, Bryonia, Nux vomica.**

(3.) After *debilitating* causes: **China, Ferrum.**

(4.) After *physical exertion*: **Arnica, Rhus toxicodendron.**

(5.) After a *blow* or *contusion*: **Arnica.**

(6.) When it appears *instead of the menses*: **Bryonia, Hamamelis, Pulsatilla.**

LEADING INDICATIONS.

Aconitum.—In prolonged and violent bleeding, in plethoric subjects, with a considerable degree of fever, flushing of the face, pulsation in the temples and neck.

Belladonna.—Bleeding from the nose *at night, which awakens the patient*; nervous restlessness; also after being overheated.

Bryonia.—Bleeding chiefly *in the morning, or at night during sleep*; or when it arises *from suppressed menstruation*, or from overheating during warm weather; patient is of an obstinate, irritable disposition.

China is generally to be selected when the loss of blood has been very considerable, and when the patient is much weakened before assistance is rendered.

Hamamelis.—Where the blood is *dark-colored* and *flows sluggishly but profusely*; also if complicated with bleeding from the lungs, or if resulting from suppressed menses.

Pulsatilla.—Discharge of blood every *afternoon, evening, or before midnight*, especially in females *with suppressed or scanty menstruation*; blood *dark and coagulated*; nosebleed with every fresh attack of cold in the head.

Rhus toxicodendron.—After *lifting heavy weights, blowing the nose, sneezing, or other bodily exertions.*

Arnica.—In addition to being the principal medicine in violent nasal hemorrhages from *external injury* or great physical exertion, it is of great importance where the hemorrhage is preceded by itching in the nose and forehead, and when the blood discharged is red and liquid.

DOSE.—Dissolve four globules in two tablespoonfuls of water, and give a teaspoonful every fifteen minutes until amelioration or change.

BOILS—(*Furuncules*).

(Page 506.)

Arnica is the most appropriate remedy against the pain, soreness, tenderness, and other acute symptoms.

Sulphur should be given forty-eight hours after the last dose of *arnica*, in cases in which the *acute* symptoms (pain and tenderness) have materially yielded to the action of the last-named remedy.

Aconitum.—When the boil presents an extremely inflammatory appearance and the affection is accompanied with considerable fever and restlessness.

Belladonna, should the boil have an erysipelatous, shiny appearance, or be situated upon the extremities and associated with swelling and tenderness of the glands under the arm-pit or upon the groin, with headache and sleeplessness.

Hepar sulphuris is of great service *when matter has accumulated* in the boil, in bringing the tumor to a head and hastening suppuration.

DOSE.—Dissolve one drop or ten globules in four table-spoonfuls of water, and take a table-spoonful every four hours ; less after improvement.

BLACK VOMIT. (See Yellow Fever.)

INFLAMMATION OF THE BOWELS.

(Page 503.)

Aconitum is indispensable in commencing the treatment of this disease (to overcome the inflammatory action) when the accompanying fever is intense, and the skin hot and parched.

Arsenicum.—Severe *burning pains* around the navel, obstinate vomiting, and excessive *prostration*.

Mercurius corrosivus.—Hard, distended, and tender abdomen ; fetid, watery stools ; constant urging to stool, followed by *hard straining*, and evacuations of *mucus and blood* or *mucus alone*.

Colocynthis.—Inflammation of the large intestines, with *drum-like distension of the abdomen* ; severe gripings ; bilious nausea or vomiting.

Veratrum album.—Great thirst ; furred tongue ; nausea and vomiting ; severe prostration ; *cold extremities* (may be given in alternation with *Arsenicum*).

DOSE.—Of a solution of six globules in three table-spoonfuls of water, take a dessert-spoonful every two or three hours until improvement sets in.

Accessories.—It will be of great value to apply cloths wrung in hot water to the abdomen and to lie *perfectly quiet*. Cold water may be taken as the thirst will indicate ; for there is nothing more cruel than to deprive a patient from the *most natural* beverage.

CONCUSSION OF THE BRAIN.

(Page 510.)

Arnica may be given in teaspoon doses of a solution of one drop or ten globules in three table-spoonfuls of water, every hour or two, to prevent further consequences.

INFLAMMATION OF THE BRAIN.

(Page 511.)

Aconitum is invariably required at the commencement of the disease, when the skin is *hot and dry* and the pulse rapid, with the ordinary indications of pure *inflammatory fever*, which is especially liable to be the case in young plethoric subjects.

Belladonna seems to possess a certain specific influence over inflammation of the brain and its membranes with the following symptoms: *great heat of the head*; redness and bloatedness of the face, with *violent pulsations of the arteries of the neck*; *burying the head in the pillow*, and increase of suffering from the *slightest noise*, with extreme sensibility to *light*; violent shooting or burning pains in the head; eyes red and sparkling, with protrusion or wild expression; dilatation of the pupils; violent and furious delirium; vomiting, involuntary evacuations of feces and urine.

Bryonia will frequently be found of service, when *Aconitum* and *Belladonna* have manifested but slight improvement, and when there is present great thirst for *large quantities* of water, eyes convulsed, sudden cries, or constant inclination to sleep; *continued chewing motion* of the jaws; the *bowels obstinately confined* and the *belly distended*; suppression of urine.

Hyoscyamus is appropriate when there are drowsiness, loss of consciousness, delirium of a mild character about one's own affairs; inarticulate speech, with frothy mucus at the mouth; picking of the bedclothes with the fingers.

Opium.—When there is *lethargic sleep*, with snoring, rasping respiration; half-open eyes; *complete apathy* and *absence of complaint*.

Stramonium.—Starting and jerking of the limbs; sleep almost natural, followed by absence of mind after waking; vision fixed; the patient appears frequently in a state of dread and utters cries; face flushed; feverish heat; skin moist; desire for light and afraid to be alone.

Cuprum and **Zincum** are both indicated in inflammation of the brain during the course of eruptive fevers. The former may be given *after the eruption has been out and has disappeared*. The

latter will be indicated in brain symptoms *before the eruption came out* (also Bryonia). Especially when convulsions set in with grinding of teeth and jerking of the limbs, also in drowsy conditions, one or the other of these two remedies will often save life under the above stated circumstances.

DOSE.—One drop or ten globules dissolved in three table-spoonfuls of water ; of this solution give a teaspoonful every hour to four hours, and less as soon as amelioration sets in.

BRONCHITIS.

(Page 513.)

ACUTE.—**Aconitum** should commence the treatment of all cases with the usual *febrile symptoms*. If administered early and frequently it will materially shorten the attack and may be alone curative. A short, hard cough, excited by tickling sensations in the windpipe and chest, inducing frontal headache and burning, sore pains in the chest, are chief indications.

Tartarus emeticus.—Paroxysms of *suffocative cough* with *loose expectoration, wheezing respiration* ; the whole chest seems to be involved ; frequently also there is palpitation, pain in the loins and back, headache, thirst. It is also useful in *chronic bronchitis* to promote expectoration.

Bryonia.—Violent cough, chiefly affecting the *upper part of the chest* under the breast-bone, with copious expectoration of thick yellow mucus, sometimes blood-streaked. In advanced stages this remedy is often valuable in alternation with *Phosphorus*. *Bryonia* is also useful in acute attacks of children with suffocative cough, great agitation, and anxiety.

Kali bichromicum.—Irritation in the windpipe and chest, inducing severe and long-continued paroxysms of cough, with *tenacious and stringy phlegm* ; tongue coated *yellow*. It is also very useful in *chronic bronchitis* with the above symptoms.

Ipecacuanha.—*Spasmodic cough*, with or without expectoration of blood, often with nausea and great difficulty of breathing ; especially in children.

Arsenicum.—*A suffocative sensation on lying down* ; anxious, labored breathing. It is very useful for weak persons and aged people.

Belladonna.—Dry, hard cough, without expectoration ; shooting into the head with the severe attacks of cough, and restless sleep.

DOSE.—Dissolve one drop or ten globules in six table-spoonfuls of water, and take a dessert-spoonful every two or three hours.

BRIGHT'S DISEASE. (See Kidneys, Diseases of.)

CHRONIC BRONCHITIS.

(Page 516.)

Besides the remedies mentioned under the acute form, use :

Phosphorus.—Whenever the lungs become involved and there is an inability to remove the phlegm.

Carbo vegetabilis.—For aged persons ; profuse expectoration or much rattling in the chest, with difficult raising of phlegm ; loss of voice ; blueness of the nails ; coldness of the extremities.

Hepar sulphur.—Irritating cough, with hoarseness and smarting in the throat, excited or aggravated by exposure to cold or atmospheric changes ; *cough, with chronic indigestion.*

Nitri acidum.—Long-standing, short, dry, teasing, laryngeal cough, without expectoration. In chronic bronchitis, in *non-tubercular* subjects.

Mercurius.—Moist cough, worse at night, with *purulent* or yellowish-white phlegm.

Sulphur.—*Obstinate* dry cough, with tightness in the chest and retching ; or loose cough, with whitish or yellowish expectoration during the day, and dry cough at night ; attended with headache or spitting of blood.

DOSE.—Take five globules or half a drop of tincture in a table-spoonful of water, every night and morning, and less when improvement sets in.

BRONCHOCELE—(*Goitre*).

(Page 521.)

The internal administration of **Iodium** is perfectly homeopathic, as the symptoms of the drug agree in most cases with the disease

Spongia has generally been found highly useful in the treatment of this affection. It is also useful for children and girls approaching puberty.

Mercurius jodatus ruber.—In cases of long standing and when the goitre is enlarging in spite of the previous remedies, it may be used with the best result.

DOSE.—Six globules or one drop of tincture in a table-spoonful of water, night and morning, for six days ; then pause a week, after which the course should be repeated, and so on until decided improvement sets in.

BURNS AND SCALDS.

(Page 525.)

Aconite.—When there is high fever, and head hot and painful ; red face ; fear of death.

Arnica.—Inflammation of the skin, with extreme tenderness and painfulness ; nervous shock.

Carbo vegetabilis.—Extreme cases ; pain so excessive as to threaten the complete extinction of life.

Coffea.—More nervous restlessness, especially in children.

DOSE.—Twelve globules or one drop of tincture in four table-spoonfuls of water ; give a teaspoonful or two every half, one, or two hours, according to severity of affection.

CANCER—MALIGNANT TUMORS—(*Carcinoma—Epithelioma*).

(Page 526.)

Remedies which may be indicated are : **Arsenic, Iodine, Belladonna, Conium, Silicea, Sulphur.** This fearful disease should always be under a physician's care, as an operation may be the only means to preserve life, which chance may be lost by ignorantly applying remedies.

CANKER (*Cancrum Oris*). (See Mouth, Diseases of.)

CARBUNCLE—(*Anthrax*).

(Page 536.)

Silicea, when administered from the commencement in simple, non-contagious carbuncle, is frequently found sufficient to effect a perfect cure.

Lachesis.—When the carbuncle presents a livid appearance, or seems disposed to extend rapidly or to burrow.

Arsenicum.—When the carbuncle threatens to terminate in mortification, and when there is great prostration, with small, quick pulse ; it is also the most efficacious remedy when the disease has arisen from contagion.

DOSE.—Of a solution of ten globules or one drop in three table-spoonfuls of water, give a dessert-spoonful every three hours.

CARDIALGIA OR HEARTBURN. (See Stomach, Diseases of.)

CATALEPSY.

(Page 538.)

The attack may often be cut off or shortened by giving remedies relating to the *cause* of it ; therefore give, if caused by anger, **Chamomilla, Bryonia** ; fright, **Aconitum, Belladonna, Ignatia, Gelsemium, Opium** ; sudden joy, **Coffea** ; grief, **Ignatia**,

Phosphoric acid ; jealousy, **Hyoscyamus**, **Lachesis** ; sexual erethism, **Platina**, **Stramonium** ; disappointed love, **Ignatia**, **Lachesis** ; religious excitement, **Stramonium**, **Sulphur**, **Veratrum**. Usual doses.

CATAMENIA. The menses or monthly courses of women. (See Menstruation, and Women, Diseases of.)

CATARRH OF THE NOSE—(*Rhinitis*).

(Page 539.)

Nux vomica is most generally useful, particularly when the symptoms are due to a draught or prolonged exposure, in winter, to a cold, dry, frosty atmosphere.

Chamomilla is preferable when a copious outbreak of perspiration has been suddenly checked by a current of cold air. In the cases of children and highly sensitive females, this remedy is more especially useful.

Calcareo carbonica should be given when the catarrh is caused by long immersion in cold water.

LEADING INDICATIONS.

Aconitum may be given when, in consequence of the swollen and congested state of the lining membrane of the nostrils, a painful sensation of fulness, heat, and smarting is experienced ; also when active febrile symptoms appear.

Nux vomica.—When there is dry obstruction *during the night only*, with oppressive heaviness in the forehead and a watery discharge from the nose in the morning.

Mercurius is indicated by *profuse discharge, producing excoriation, swelling or redness of the nose*, pains in the head and face. This is a very valuable remedy in common colds, especially when they are epidemic.

Hepar sulphur.—When *Mercurius* seemed to be indicated but did not improve the condition, and when there is a disposition to take cold easily, together with affections of the throat and chest.

Kali bichromicum.—A sense of tight pressure at the root of the nose ; discharge of tough, stringy, yellow mucus ; loss of smell ; constant fetid smell before the nose. Also useful in ulceration of the mucous membrane and bones of the nose.

DOSE.—Dissolve ten globules or one drop of tincture in six table-spoonfuls of water, and give a dessert-spoonful every two hours.

CATARRH OF THE VAGINA, OR LEUCORRHEA. (See Women, Diseases of, also Whites.)

CHICKEN POX—(*Varicella*).

(Page 544.)

Rhus toxicodendron is generally the first and only remedy required, and under its action the disease quickly develops and soon disappears.

Aconitum.—Febrile symptoms.

Belladonna.—Headache; flushing of the face; sore throat.

Apis.—Excessive itching with the eruption.

Mercurius.—If any of the vesicles tend to suppurate and the disease seems to take a more severe form.

DOSE.—Dissolve ten globules or one drop in three table-spoonfuls of water, and give a dessert-spoonful every three hours.

CHANGE OF LIFE. (See Cessation of the Menses, and Women, Diseases of.)

CHILBLAINS—FROST-BITE—FROZEN LIMBS.

(Page 546.)

Arnica.—In cases of a subacute character this remedy is often very useful, particularly when the swelling is red, *shining, hard*, and painful, *attended with itching* (used also externally; see below).

Pulsatilla is to be preferred when the inflammation is of a *livid hue*, with itching and beating in the part affected, and when the suffering *comes on or is aggravated in the evening or towards midnight*.

Belladonna should be selected when the inflammation is severe and the parts affected are of a bluish or *bright red* color, attended with a creeping, tingling sensation.

Rhus toxicodendron.—When there is considerable inflammation, with heat, swelling, tingling, itching, and the *formation of blisters*.

Sulphur is a valuable remedy when the inflammation and itching are very severe and the affection has failed to yield to the foregoing remedies; also when there is a tendency to constantly repeated attacks.

DOSE.—Five globules or half a drop of tincture in a dessert-spoonful of water, every night and morning, until amelioration is manifest.

External treatment.

Tincture of Arnica may, in many cases, be applied externally to the parts affected, simultaneously with the internal administration of the *same* remedy, and when the symptoms are such as are described under the head of this medicine above.

Tincture of Cantharides (two drops to one ounce of alcohol). In recent chilblains, induced by exposure to intense cold, this remedy may be applied externally with great success.

Tincture of Rhus toxicodendron is preferable in the case of old chilblains, when the tendency to blistering no longer exists, and when the severe pain has been replaced by smarting, itching, and irritation.

APPLICATION.—To six parts of water add one of the tincture selected, and bathe the parts freely with this lotion three times a day until permanent improvement or change.

CHILD-BED FEVER. (See Puerperal Fever.)

CHILLS AND FEVER. (See Ague.)

CHLOROSIS. (See Menstruation.)

CHOLERA MORBUS.

(Page 548.)

Ipecacuanha is very frequently the most appropriate remedy in the premonitory stage, and it is particularly indicated when there is *nausea with copious vomiting*, and more or less *gripping, followed by diarrhea*, the stools still containing excremental matter mixed with slime, and presenting a *greenish or brownish color*; sensation of weakness; coldness of the face and limbs; sensation of shivering in the belly; slight cramps in the calves of the legs and in the fingers and toes.

Chamomilla.—When the complaint has been excited by a *chill*, and is accompanied by great dread of the disease, or when a *fit of passion* has given rise to it (where it is almost specific). The following symptoms most especially indicate its employment: acute, colic-like pains, or heavy *pressure* in the region of the navel, sometimes extending to the heart, with excessive anguish; bilious diarrhea; cramps in the calves of the legs; tongue covered with a yellow coating; sometimes vomiting of acid matter.

Iris versicolor is of great value even in severe cases, particularly when there is present *colicky* pains about the navel, *intermittent, before each spell of vomiting or purging*; nausea and vomiting of sour fluid; vomiting of food an hour after eating, or of bile, with feeling of great heat and sweat; *watery diarrhea*; worse at night, with great debility.

Veratrum album should at once be employed if the disease increases, notwithstanding the administration of the preceding

remedies, or if from the first it assumes the following characteristics : *violent vomiting with severe diarrhea ; excessive weakness and cramps in the calves of the legs ; eyes hollow or sunken, countenance pale ; coldness of the breath and tongue ; excruciating pain in the region of the navel ; great thirst for large quantities of water ; extreme coldness of the extremities ; cold, clammy sweat.*

Arsenicum, like the last-mentioned remedy, is indicated in more severe forms of the disease ; especially when it is attended with rapid prostration of strength, *insatiable thirst, but takes only a sip ; burning sensation in the region of the stomach, with anguish and fear of death ; almost constant discharge from the bowels of a perfectly watery fluid, which is acid, and is accompanied by burning in the anus ; violent and painful vomiting ; tongue and lips dry, cracked and bluish or black ; pulse small and weak ; clammy perspiration.*

DOSE.—Of a solution of fifteen globules in two table-spoonfuls of water, or three drops of tincture in four table-spoonfuls of water, give a teaspoonful every half hour or after each evacuation of the bowels ; and when improvement sets in, every two or three hours, until positive relief.

ASIATIC CHOLERA.

(Page 552.)

Homeopathic Treatment.—Camphora.—During the preliminary stage, or sometimes even when *vomiting has commenced*, provided the cramps or spasms are of a *tonic* nature of long duration, the affected parts remaining for a length of time *distorted or stiffened* without relaxation.

Veratrum.—*Violent, sudden*, and frequent attacks of *vomiting and purging*, consisting of a whitish watery fluid, with tonic or irregular, convulsive *spasms of short duration*, but often repeated, and excessive thirst for large quantities of cold water or acidulated drinks. (See Cholera Morbus.)

Cuprum.—When there is vomiting and purging, but the *cramps and spasms form the predominating feature* of the disease, and particularly *when convulsive movements are present*. The alternate employment of Veratrum and Cuprum is often of great efficacy when the latter alone produces only partial improvement.

Arsenicum.—When the *burning pains* in the stomach and bowels, which are so frequently complained of in cholera, form a prominent symptom ; when the vomiting and purging are very distressing, but all evacuations small in quantity, and ejected with

painful effort ; *insatiable thirst*, but only for *small sips* of water, the symptoms prone to be aggravated by its indulgence. Extreme *anxiety, fear* and *restlessness*. This remedy may also be alternated with *Veratrum* or *Cuprum*, when some of the above symptoms are mixed with others belonging to the latter remedies.

Secale cornutum.—When the vomiting has ceased, but excessive or involuntary, *unnoticed, colorless* diarrhea, and pains in the limbs remain ; or when the *cramps and convulsions predominate*, and do not yield to *Veratrum* and *Cuprum* ; when the fingers are drawn backwards and spread asunder like a fan. Mostly required in old and debilitated persons.

Carbo vegetabilis may be employed with success when the face is deep red or livid, bloated, and covered with a clammy sweat, the breathing much oppressed, and the patient in a drowsy, inanimate state ; the skin icy cold and the pulse scarcely perceptible.

Mercurius may be given when the disease takes dysenteric forms, evacuations consisting of frothy mucus or mucus mixed with blood ; *great tenesmus* ; severe griping and straining.

China.—In protracted cases with great loss of fluid, leaving a bloodless and debilitated condition of the system.

Phosphorus and **Sulphur** if *diarrhea* persists.

DOSE.—One drop or ten globules in a dessert-spoonful of water every fifteen or thirty minutes, or in severe cases every *five* minutes. Five drops of the tincture of **Camphora** (if this remedy seems indicated) should be given on a piece of sugar in the same intervals of time.

CHOLERA INFANTUM, OR SUMMER COMPLAINT.

(Page 537.)

Aconitum is very frequently indicated, and should be given in cases in which there is febrile excitation, manifested by heat and dryness of the skin, accelerated pulse, and great thirst. Under such circumstances, this remedy very often not only removes the febrile symptoms, but cuts short the entire disease and restores the babe to health.

Chamomilla will frequently prove useful in the early stages of some cases, particularly if the child be suffering from the irritation incident to teething ; it is more particularly indicated by the presence of griping, colicky pains, which induce the child to *draw up its legs towards the belly* ; *greenish stools* ; fretfulness and crossness, with *desire to be carried*.

Ipecacuanha should be given when the stools, *which are frequent*, have a fermented appearance or resemble greenish water,

and when more particularly *nausea and vomiting* predominate, the child seeming to be sick at its stomach constantly.

Podophyllum.—In cases in which the dejections have an exceedingly offensive odor, and are passed most frequently in the morning; the child moans during sleep, lying with half-closed eyes, and rolls its head from side to side.

Mercurius.—Particularly at the commencement, if the colicky pains are relieved by the purging, the stools being slimy or bloody; or when there is a great deal of perspiration, especially on the thighs; aggravation at night.

Croton tiglium should be administered in cases in which the stool is forcibly expelled, as though forced by a syringe—one gush and it ceases.

Arsenicum.—In cases where there is great weakness from the first, so that the child does not care to hold its head up; there is much thirst, while drinking induces vomiting and stool; vomiting and purging occur at the same time and greatly exhaust the child; great restlessness, which, together with the other symptoms, grows worse after midnight.

Veratrum.—Under similar conditions as arsenicum with *extreme coldness of the extremities*, and an imperceptible pulse; rapid sinking of strength. This remedy in alternation with the former has saved many a case from an otherwise inevitable death.

Calcareæ carbonica and **Sulphur** will prove valuable in cases in which the stools are whitish and watery, having a sour smell, as does the matter vomited; there is great emaciation, while the abdomen is bloated; the face has an old, wrinkled look, the extremities are cold. Especially adapted to scrofulous children, with retarded dentition or where the disease has become chronic.

These two remedies must be given once a day only—one day Sulphur, the next Calcareæ carbonica, and so on for a week, then pause a week, and repeat the same treatment until general improvement.

DOSE.—Of a solution of six globules in three tablespoonfuls of water give *a teaspoonful after each evacuation*, and every three or four hours when improvement sets in.

COMMON COLD—COLD IN THE HEAD—(*Coryza*).

(Page 160.)

Aconitum may precede or be given alternately with any of the next two remedies, when, in consequence of the swollen and congested state of the lining membrane of the nostrils, a painful sensation of fulness, heat, and smarting is experienced; and also when active febrile symptoms appear.

Nux vomica is generally preferable to all other remedies in the first stage, and especially when there is dry obstruction *during the night only*, with pressive headache in the forehead ; heat in the head and face, increasing towards evening.

Lycopodium will often be found of great service in obstinate cases of stuffing of the nose, particularly at night, rendering it necessary to sleep with the mouth open, which causes a disagreeable dryness without much thirst, attended with much confusion in the head and burning pain in the forehead. This remedy is frequently more or less useful in colds in the head of all kinds.

Mercurius is indicated by profuse discharge, producing excoriation, swelling or redness of the nose, pains in the head and face.

Hepar sulphuris. When only one nostril is affected or when there is headache which is aggravated by the slightest movement or cold air ; or where *Mercurius* seems indicated but does not relieve.

Belladonna. If after *Hepar Sulphur* the headache continues unabated, or when it becomes associated with a sensation of heat and fulness about the head and eyes. When the sense of smell is variously affected, being sometimes too acute and at another too dull, there will be additional reason for resorting to this remedy.

Kali bichromicum.—In *swelling of the nose* and *nostrils*, with *copious, watery secretions*, and diminished sense of smell.

Arsenicum.—*Obstruction of the nose*, with, *at the same time*, discharge of a thin, acrid, excoriating phlegm, and burning heat in the nostrils.

Pulsatilla.—When the nasal discharge is thick, fetid, greenish-yellow, or mixed with clots of blood ; loss of taste and smell ; headaches, sneezing, chill, especially towards evening ; disposition to weep ; lowness of spirits ; heaviness or confusion of the head in a warm room.

DOSE.—Of a solution of one drop or ten globules in four table-spoonfuls of water, give a dessert-spoonful every three hours, and less frequently when improvement begins.

COLIC.

(Page 563.)

Colocynth.—*Cutting, griping or intermittent pains*, extremely severe, with flatulence or diarrhea, followed by tenesmus.

Chamomilla.—In women and children ; pinching and twisting pain ; soreness of the bowels ; nausea.

Nux vomica.—Spasmodic flatulent colic, with pain, as if the bowels and bladder were pressed upon with a cutting instrument ;

irregularity in the action of the bowels ; also corrects their tendency to recurrence.

Iris versicolor.—*Severe flatulent colic* ; the pains often yield to this remedy, after *Nux vomica*, *Chamomilla*, and *Colocynth* have failed.

Belladonna.—Paroxysmal colic, griping or sensation as if a ball or lump were forming ; there may be distension of some part of the abdomen ; redness of face, with straining, especially in children.

Plumbum.—Violent constrictive, shooting, or pinching pains in the region of the navel ; constant desire to eject and expel flatulence ; torpor, numbness and stiffness of the limbs ; abdomen hard and flat (drawn in) ; flatulence and *obstinate constipation* ; with stools formed like sheep's dung ; skin pale, bluish or yellow ; cold extremities.

Veratrum.—Severe *crampy pains*, with coldness of the whole body ; flatulent colic, mostly at night ; colic affecting the whole abdomen, with swelling and loud rumbling.

Bryonia.—In less severe cases, when, in addition to fulness of the bowels, there are sharp, stitching pains in the sides or bowels, with irascibility.

Other remedies sometimes required are :

Cocculus, in menstrual colic.

Mercurius, **Ipecacuanha**, **Podophyllum**, in bilious colic.

Dioscorea.—Sudden attacks, with vomiting of food.

DOSE.—Of a solution of ten globules or one drop, in four table-spoonfuls of water, take a dessert-spoonful every half hour, and less when improving.

LEAD OR PAINTER'S COLIC.

(Page 564.)

Lead colic will be most appropriately treated by **Opium**, **Belladonna**, **Platina**, **Podophyllum**, **Alumina**, **Acidum sulphuricum**.

DOSE.—Of a solution of ten globules or one drop, in four table-spoonfuls of water, take a dessert-spoonful every half hour, and less when improving.

COLIC IN INFANTS.

(Page 566.)

Colic in infants is best treated by the remedies pointed out under ordinary colic above ; especially **Chamomilla**, **Nux vomica**, **Belladonna**, **Colocynth**, **Iris versicolor**.

DOSE.—Of a solution of ten globules or one drop, in four tablespoonfuls of water, take a teaspoonful every half hour, and less when improving.

CONGESTION OF LIVER. (See Liver, Diseases of.)

CONGESTION OF LUNGS. (See Lungs, Diseases of.)

CONGESTIVE CHILLS. (See Ague.)

CONGESTIVE FEVER. (See Intermittent Fever.)

CONSTIPATION—COSTIVENESS.

(Page 568.)

It should be distinctly borne in mind that the following remedies are not intended to “*act upon the bowels*” like purgatives, but to correct the derangement upon which the constipation depends.

Bryonia.—Chilliness ; *throbbing headache* ; pain in the region of the liver ; also in persons having a tendency to *rheumatism* ; also when there is no inclination to stool.

Opium.—*Complete torpor* of the bowels, when the motions are hard and lumpy, with headache, drowsiness, dizziness, congested face, and retention of urine. Opium is well-adapted to *the aged* and to persons of a *torpid* or plethoric temperament, who do not readily respond to other remedies.

Lycopodium.—Rumbling and *flatulence* ; *full, distended abdomen* ; heartburn ; water-brash ; difficult evacuations.

Hydrastis.—Simple chronic constipation. Hydrastis gives tone locally and generally.

Plumbum.—Obstinate cases, *as from palsy of the intestines*, either painless or with severe colic ; unsuccessful efforts to evacuate, with a painful, constricted feeling about the anus ; the motions are dark and passed in *small balls*. For persons of a paralytic tendency it is strongly indicated.

Nux vomica.—Constipation occurring in connection with other affections ; habitual constipation, *with frequent ineffectual efforts to stool* ; also with nausea, *congestive headache*, ill-humor, and uneasy sleep. It is especially useful when the affection is consequent of indigestion, the use of alcohol, tobacco, or coffee ; for persons of sedentary habits and those who have ruined the regularity of their bowels by purgatives.

Sulphur.—*Habitual costiveness*, with flatulent distension of

the abdomen, *piles*, etc. As an intercurrent remedy it acts like opium, but having a wider sphere, and being useful in numerous forms of disease, it is of far greater value.

DOSE.—Dissolve ten globules or one drop in a wineglassful of water, and take a table-spoonful twice a day.

CONSUMPTION. (See Pulmonary Diseases.)

CONVULSIONS—FITS.

(Page 572.)

Belladonna.—Convulsions, with determination of blood to, or inflammation of, the brain; *hot, flushed face*, especially in stout children, who start suddenly in sleep and stare wildly.

Chamomilla.—Spasmodic twitchings of the eyelids and muscles of the face, one cheek red and the other pale. It is especially suitable for irritable children, and in fits from indigestion.

Opium.—Convulsions from *fright*, followed by *stupor*, with labored breathing, and confined bowels.

Cuprum.—Red, bloated face, shrieking before an attack, which resembles an epileptic seizure.

Cina or Ignatia.—Convulsions from thread-worms.

Gelseminum.—Convulsions from *cerebral diseases*.

DOSE.—*During the attack*, when the child cannot swallow, place five globules dry on the tongue, or press them between the teeth; afterwards give a dessert-spoonful of a solution of ten globules, or one drop of tincture, in three table-spoonfuls of water, every half hour to three hours, if the attacks repeat less often, or stop.

COUGHS. (See Colds; also Inflammation of the Lungs.)

CRAMPS.

(Page 575.)

Apis.—Nervous restlessness; trembling and jerking of the limbs; shrieking, boring head into pillow; great headache (cerebral affections).

Belladonna.—Starting from sleep, with a wild look, dilated pupils, red eyes, and flushed face.

Chamomilla.—Child gets stiff and bends backwards, kicks and screams immoderately.

Cicuta virosa.—Violent shocks through the body, which causes patient to jerks suddenly. Lock-jaw.

Cina.—Convulsive attacks at night, also of internal organs, with a clucking noise, as if water were poured out of a bottle, from the throat down to abdomen.

Cuprum.—Spasms during dentition, also from retrocession of scarlet fever.

Ignatia.—Spasms returning at the same hour every day. Useful in nervous, hysterical patients.

DOSE.—*During the attack* place five or six globules upon the tongue of patient ever ten to thirty minutes. Against the tendency to cramps give six globules, or one drop of tincture, in water every night.

CROUP—TRUE OR MEMBRANOUS CROUP.

(Page 576.)

1. *At the commencement.*—**Aconitum** alternated with **Spongia** or **Tartarus emeticus**.

2. *Fully developed croup.*—**Bromium**, **Iodium**, **Spongia**, **Kali bichromicum**, **Hepar sulphur**.

LEADING INDICATIONS.

Aconitum.—Febrile symptoms, *spasms of the larynx*, inducing *difficult breathing*. Always at the beginning of croupy symptoms, and even when another medicine is indicated, the remedy chosen should be alternated with Aconitum, as spasm frequently occurs during the course of the disease.

Bromium.—Asthenic croup, with extreme congestion and swelling of the air-passages; affection of upper part of the air-tube, causing the child to grasp at the throat and evince anxiety; dry croupy cough like that of a sheep, grating and tickling.

Spongia.—Hard, barking, whistling cough; breathing very labored.

Iodium.—In the same cough as the former remedy, but when that should not have relieved or the affection is in the lower part of the air-tubes.

Hepar sulphur.—Loose cough, with a ringing or brassy sound, and constant rattling in the respiratory organs, during which the patient tries in vain to get relief by expectoration. Generally after Spongia.

DOSE—Dissolve twenty globules, or two drops, in four tablespoonfuls of water, and give, *in severe cases*, a tablespoonful every ten to thirty minutes; in less severe, or during improvement, every two, four, or eight hours.

FALSE CROUP.

(Page 578.)

1. *During the attack*: Prompt administration of **Aconitum**, **Sambucus**, **Ipecacuanha** **Gelsemium**, **Belladonna**, **Cuprum**.

2. *During convalescence*: **Phosphorus** (cough with soreness of the chest); **Spongia**, **Carbo vegetabilis** or **Hepar sulphur** (hoarseness with wheezing cough); **Sulphur**.

LEADING INDICATIONS.

Aconitum.—*Spasm of the larynx*, inducing *difficult breathing*, febrile symptoms. Aconitum is a priceless remedy in spasmodic croup, and often cures without any other remedy; if there be doubt as to the true character of the malady, it should be alternated with Spongia.

Gelsemium.—Occasional acute attacks, which do not yield promptly and fully to Aconitum.

Belladonna.—*Red face*, *dilated pupils*, headache.

Sambucus.—Burning, red, hot face, hot body, cold hands and feet, *during sleep*; *on awaking*, profuse perspiration on the face and body, which continues during waking hours; return of dry heat during sleep.

Ipecacuanha.—Bronchial irritation, *rattling of phlegm in the chest*, which is at times detached and causes vomiting.

DOSE.—The remedy may be given dry or dissolved in water, five globules every ten or fifteen minutes for three or four times; after the attack is passed, every four or five hours for two or three days, to prevent recurrence.

DELIRIUM TREMENS.

(Page 581.)

Nux vomica is particularly useful in the first stage of the disorder, and may frequently be the means of arresting its further progress when administered at that period. It is more especially indicated when there is *great trembling*, loss of strength, and *violent starting*; inability to keep the limbs quiet; *stammering articulation*; *great irritability of temper*; great anguish; *belching and other gastric symptoms*; *constipation*; very restless sleep or sleeplessness; red face and eyes.

Opium.—When the disease has become fairly established, and the patient is affected with *violent delirium*, with constant movement of the hands, *or convulsions*. This remedy does not act by its sleep-producing properties, but by the characteristic symptoms which it exhibits, and which are exactly similar to those which are developed in consequence of excess in the use of ardent liquors.

Belladonna.—Great heat of the head and violent pulsation of the arteries of the neck ; great aversion to light ; red, sparkling or protruding eyes, with wild expression, redness and bloatedness of the face, and excessive susceptibility to noise ; desire to run away ; frantic delirium.

Hyoscyamus.—Similar to belladonna, but the hallucination-take more the character of extreme and groundless jealousy ; or the patient manifests a great disposition to uncover himself completely, or an intense desire to escape.

Stramonium.—When opium, hyoscyamus, or belladonna may have failed to produce important and beneficial results ; or when the mental disturbance assumes the form of religious mania.

Arsenicum, chiefly in inveterate cases, when profuse sweat, excessive restlessness, fear of solitude, spectræ and death, are the most prominent symptoms.

DOSE.—Eight globules, or one drop, in a tea-spoonful of water, or dry, upon the tongue, every two hours, and subsequently at intervals of six hours, until a decided amelioration or change.

DIABETES.

(Page 583.)

Acidum phosphoricum.—This medicine, with attention to dyspeptic symptoms, generally relieves, and not unfrequently cures. The special symptoms calling for it are : frequent urging to urinate, pain in the loins, emaciation and prostration ; it is particularly valuable in cases of a *nervous origin*.

Uranium nitricum has sometimes proved efficacious.

Terebinthina and **Arum tryphillum** have also proved remedial.

Muriate of Quinine is found to remove sugar from the urine.

Arsenicum, Digitalis, Nux vomica, Cantharides, Mercurius, are often required to meet special symptoms.

DOSE.—Use three drops, or thirty globules, in a dessert-spoonful of water, three times a day, and less while improving.

DIARRHEA.

(Page 588.)

1. *Diarrhea from indigestible food*.—**Pulsatilla**, **Antimonium crudum**, **Ipecacuanha** **Nux vomica**.
2. From impure water and effluvia.—**Baptisia**, **Arsenicum**.
3. From fruits or acids.—**Arsenicum**, **Colocynth**.
4. From cold.—**Camphora** (with severe chills).
Aconitum (from suppressed perspiration).
Bryonia (changes from hot to cold weather).
Dulcamara (after getting damp).
5. From mental causes.—**Ignatia**, **Veratrum**, **China**, **Chamomilla**.
- 6.—In weak and aged persons.—**Phosphorus**, **Acidum phosphoricum**, **Antimonium crudum**, **Acidum nitricum**.
7. *Chronic diarrhea*.—**Arsenicum**, **Phosphorus**, **Calcareo carbonica**, **Acidum phosphoricum**, **Iodium**, **China**, **Sulphur**, **Ferrum-jodatum**, **Acidum nitricum**.

LEADING INDICATIONS.

Camphora.—In *sudden* and *recent* cases, with chilliness, shivering, cold creeping of the skin, severe pain in the stomach and bowels, cold face and hands. (See Cholera.)

Dulcamara.—Diarrhea from cold and wet, particularly in the summer or fall; nocturnal evacuations, which are slimy or bilious; impaired appetite and dejection of spirits.

Pulsatilla.—Purging from *fatty or rich food*, bitter taste in the mouth, nausea, eructations and colicky pains, especially at night; *mucous diarrhea*, mostly in children.

Antimonium crudum.—Watery diarrhea, with disordered stomach, loss of appetite, *white-coated tongue*, *eructations*, and nausea; adapted more to aged people.

China.—*Simple summer diarrhea*; also after eating, or in the night, or early in the morning; containing undigested food, painless brownish motions; debility, thirst, and loss of appetite.

Apis.—Painless, greenish-yellow diarrhea, *recurring every morning*.

Arsenicum.—Diarrhea accompanied with vomiting; heat in the stomach, and a *burning sensation* attending the effort of expelling the motions, with griping or tearing pains in the abdomen. It is very useful in diarrhea with extreme weakness, emaciation, coldness of the extremities, pallor, sunken cheeks, great thirst.

Bryonia.—Diarrhea during the heat of summer, especially if caused by cold drinks, or by sudden change from heat to cold wind.

Mercurius.—Greenish, slimy, or clay-colored stools, with *much straining*; also bloody stools.

Podophyllum.—Dysenteric and bilious diarrhea, with prolapse of the bowels.

Aloes.—Diarrhea, with feeling of *uncertainty* as to the power of retaining the contents of the bowels.

Veratrum.—Copious, dark, *watery* evacuations, with *cramps, great thirst, vomiting, coldness of the body, and rapid sinking*.

Acidum phosphoricum.—Chronic, *exhausting*, painless diarrhea, particularly when there is involuntary action of the bowels.

Phosphorus.—Weak, nervous patients, especially young persons with a tendency to *pulmonary consumption*.

Ferrum.—*Anæmic* patients; chronic diarrhea with undigested food.

Calcareo Carbonica.—Chronic diarrhea, with weakness, *emaciation*, pale face, and sometimes variable appetite; especially in scrofulous persons.

DOSE.—*In recent cases* dissolve ten globules, or one drop of tincture, in four table-spoonfuls of water, and give a dessert-spoonful after each evacuation. *In chronic conditions* give five globules in a table-spoonful of water night and morning.

DIPHTHERIA.

(Page 591.)

Belladonna frequently is of great value in the early stage of mild cases, more particularly when the disease sets in with marked febrile symptoms, and there is much redness and inflammation of the tonsils (see Plate No. III, Fig. A); the patient is uneasy and restless, and complains of the throat; is drowsy and cannot sleep, or starts up out of every sleep.

Mercurius protojodatus.—Should the throat present a *deep-red appearance*, and the tonsils and surrounding parts be considerably *swollen* and studded with specks of exudation (see Plate No. III, Fig. B); and if, moreover, there be cold in the head, accumulation of mucus in the throat, and *excessive secretion and flow of saliva of a fetid odor*, Mercurius is a useful if not an indispensable remedy. It is an important remedy in all forms of this disease.

Kali bichromicum.—When the disease extends into the posterior parts of the throat, and thence into the nostrils. The discharge from the nose or mouth is *tough and stringy*; pain in the left ear; swelling of the glands under the ears; croupy cough;

measle-like eruption, and red shining tongue ; *thick, cheesy, yellow patches on the tonsils and palate.* (See Plate No. III, Fig. C.)

Acidum nitricum.—When, notwithstanding the employment of Mercurius, superficial patches of exudation continue to present themselves ; and when the throat, in place of healing, becomes painful and of a vivid red color ; also when there is a tendency to ulcerative complication, and the gums are disposed to bleed, this remedy may be employed with advantage. It is further indicated by the presence of ulcers on the mucous membrane of the mouth, and by an acrid corrosive discharge from the nose.

Phytolacca.—Particularly in the mild variety of diphtheria. It is indicated by the presence of considerable febrile manifestation ; headache ; violent aching pains in the back and limbs, great weakness, so that the patient cannot stand, and gets faint and dizzy even when rising up in bed.

Lachesis.—Deposits *commencing on the left side*, and either remaining there or spreading to the right side ; patient always *worse after sleeping*, and cannot bear the slightest touch on the throat.

After Belladonna, or in the malignant form of the disease, when mortification of the parts threatens. (See Plate No. III, Fig. D.)

Aplis.—When there is great debility from the commencement of the disease ; the false membrane presents a dirty-grayish hue ; there is puffiness around the eyes, pain in the ears when swallowing ; an itchy, stinging eruption on the skin ; numbness of the feet and hands.

Arsenicum.—In cases in which the *prostration of strength is excessive* or threatens to *increase*, notwithstanding the employment of other well-indicated remedies, together with nourishing diet, this remedy should be brought into requisition. It is further indicated by an excessive and distressing restlessness, which is worse after midnight.

DOSE.—Dissolve twelve globules, or one drop of tincture, in five tea-spoonfuls of water ; give a teaspoonful every two hours until amelioration or change. In *severe cases* dissolve twenty globules, or three drops of tincture, in four table-spoonfuls of water, and give a dessert-spoonful every hour until improvement manifests itself. The remedies should be given in the third or sixth trituration or dilution.

DROPSY.

(Page 598.)

Dropsy is only a symptom of disease, and can only be cured

radically by *curing the disease* which causes it ; however, the following remedies will help to comfort the patient, and may even, when they correspond to the whole condition, cure the case entirely.

Arsenicum, one of the most valuable medicines for the treatment of various forms of dropsy, whether acute or chronic. It is of great value in general dropsy, ensuing as the result of very severe and mismanaged cases of acute inflammation, or in those chronic and protracted cases which have been gradually induced in shattered constitutions. *Great difficulty of breathing* and shortness of breath, *great oppression in ascending a height*, as also in every motion, or even on laughing ; *suffocative attacks*, more especially at night and in bed, with panting and wheezing respiration amid great distress, as if the patient were going to die ; and more especially when with the paroxysms great debility sets in.

Apis.—The dropsy is characterized by great soreness of the muscles of the abdomen ; *stinging, burning* pains in different parts of the body ; the urine is scanty and of a very dark color ; great difficulty in breathing, particularly when lying down, even leaning backwards causes a suffocative feeling ; *absence of thirst* ; after scarlet fever.

China.—Dropsy after excessive loss of blood or other animal fluids ; or in cases which are associated with organic disease of the liver or spleen ; and which are characterized by short, distressing cough, with or without expectoration, extreme paleness of the skin, general chilliness, frequent urging to pass water, but without any or with very little effect.

Ferrum.—If China has not benefited, although it seemed well indicated, and when there are pricking or shooting pains in the parts affected with dropsical swelling.

Bryonia.—In cases of a more *acute or inflammatory* character, whether occurring as a primary disease or otherwise, but characterized by great oppression at the chest with acute pricking pain during a full inspiration, and by increase of the dropsical swelling during the day and diminution at night, associated with constipation. Bryonia is also of service in cases of dropsical swelling which occur during an attack of inflammation of the lungs.

Sulphur.—Of great service in completing the cure in almost all instances in which the disease occurs in persons of a marked scrofulous habit of body ; or in cases in which *well-selected* remedies do not exhibit the expected result, it should be employed as an intermediary remedy.

Helleborus niger.—Especially in *acute cases*, either with considerable febrile excitement or when there is a tendency to torpor

and lethargy ; urine almost suppressed ; or when shooting pains in the extremities prevail.

DOSE.—Of a solution of ten globules, or one drop of tincture, in four table-spoonfuls of water, give a dessert-spoonful every four to six hours. In acute cases the same quantity every hour, or even in shorter intervals, as necessity may require.

ACUTE DROPSY OF THE BRAIN.

(Page 603.)

Belladonna.—Great heat of the head ; *redness and bloatedness of the face ; burying of the head in the pillow*, or moving the head from side to side ; great increase of suffering by the least noise *or light* ; eyes red and sparkling, dilatation of pupils ; vomiting, with clean tongue ; violent delirium ; restlessness or stupor, sometimes low muttering ; grinding of the teeth ; convulsions ; involuntary evacuations of the bowels or bladder.

Hyoscyamus.—Violent convulsions ; loss of consciousness, or inarticulate speech ; delirium, wild, fixed look ; picking at the bedclothes with the fingers.

Apis.—When the child emits shrill, piercing screams, while asleep, as though it suffered from sudden and severe pains ; after suppression of eruptions, as scarlatina, measles, etc., or when there are sweating about the head, squinting, grating of the teeth, trembling of the limbs, and irregular, slow pulse.

Helleborus niger.—Complete apathy ; the child cannot raise itself without assistance ; frequent rubbing of the nose ; no desire for any thing but drinks ; swallowing greedily ; easily made angry ; scanty dark urine with coffee-groundlike sediment.

Opium.—Lethargic sleep, with snoring respiration ; half-open eyes ; complete apathy and absence from complaint ; especially after cholera infantum.

Zincum.—In the last stages, with symptoms of *paralysis of the brain* ; half-closed eyes ; dilated, insensible pupils ; icy coldness of the extremities of the entire body ; hands and feet blue ; impeded breath, and small, weak pulse.

DOSE.—Dissolve ten globules in three table-spoonfuls of water, and give a teaspoonful every two hours, and less while improving.

CHRONIC DROPSY OF THE BRAIN.

(Page 605.)

Calcarea carbonica Zincum, Helleborus, Arsenicum, and

Sulphur should be mentioned as those which have proved to be of the most use in the treatment of the chronic form of this disease. The particular indications for each, respectively, may be derived from the previous article, or from that on "Characteristic Effects."

DOSE.—Give five globules in a teaspoonful of water every night until an improvement will be noticed ; then stop for a week or as long as the improvement keeps on, and continue again with the same or another remedy, as the symptoms will indicate.

DYSENTERY.

(Page 607.)

Aconitum.—If febrile symptoms are well marked, the early use of this remedy often arrests the disease at its outset.

Mercurius corrosivus.—Bloody evacuations, *mucus mixed with blood* ; severe pain and *straining* before and *after* discharge ; urine completely suppressed or passed with difficulty, with severe tenesmus of the bladder, while yet the patient lies perfectly quiet and composed.

Aloes.—*Shooting, boring* pains near the navel, *increased by pressure ; fainting during stools* ; evacuations of bloody water ; violent tenesmus ; frequent cutting pains, with pinching in rectum and loins.

Colocynth.—Often required after *Mercurius*, especially when *colicky pains are very severe* ; abdomen distended ; tongue white ; discharges slimy ; the patient is doubled up with pain, pressing any object against the abdomen for relief ; fruitless attempts to vomit ; burning along the sacral region.

Ipecacuanha.—Autumnal dysentery, with nausea and vomiting, uneasiness, straining and colic ; the evacuations are frothy, fetid, and afterwards bloody, sometimes mucous and greenish.

Nux vomica.—The first to be given after allopathic drugging ; *small* and frequent evacuations with violent tenesmus, which ceases with the evacuation ; *pain in the back, as if it were broken* in the region of the sacrum.

China.—Dysentery in marshy districts ; putrid and intermittent dysentery ; weak, thready pulse ; cold extremities.

Sulphur.—In obstinate cases, where ordinary remedies fail in affording relief, especially where there is constitutional taint, or hemorrhoidal disease ; also as an intercurrent remedy.

DOSE.—Of a solution of twelve globules, or one drop of tincture, in four table-spoonfuls of water, give a teaspoonful every

twenty or thirty minutes, in urgent cases ; in milder ones give a dessert-spoonful every two to three hours.

CHRONIC DYSENTERY.

(Page 612.)

Phosphorus, Acidum nitricum, Sulphur, China, Calcareo carbonica, Acidum phosphoricum are our chief remedies.

For special indications, see article *Acute Dysentery* and the “Characteristic Effects.”

DYSPEPSIA.

(Page 615.)

1. *Acute Dyspepsia*,—**Nux vomica, Pulsatilla** (from rich or fatty food), **Iris versicolor** (vomiting and diarrhea, with headache), **Arsenicum, Colocynth** (from sour fruits or vegetables), **Bryonia**.

2. *Chronic Dyspepsia*.—Besides the foregoing remedies, **Hepar sulphur, Carbo vegetabilis, Calcareo carbonica, Sulphur, Lycopodium, Antimonium crudum, Kali bichromicum, Mercurius, Arnica**.

3. *From mental causes*.—**Nux vomica** (business anxiety), **Ignatia** (grief), **Aconitum, China**, or **Nux vomica** (night-watching, etc.).

4. *Debilitating losses*, as from diarrhea, hemorrhage, suppuration, etc.—**China, Acidum phosphoricum, Phosphorus, Ferrum**.

5. *From cold*.—**Aconitum, Arsenicum, Mercurius**.

LEADING INDICATIONS.

Nux vomica.—Pain, tenderness, and fulness of the stomach after meals ; heartburn ; sour acrid risings ; flatulence ; frequent vomiting of food and bile ; sour or bitter taste ; *the head is confused, aches early in the morning* ; sleepy after meals and unfitted for any exertion ; sallow, yellowish complexion, and an *irregular action of the bowels*, with ineffectual urging. *Nux vomica* is particularly indicated in persons of dark, bilious complexion, who employ their brains too much, but take too little open-air exercise, eat largely, and drink alcoholic liquors.

Pulsatilla.—Indigestion from fatty food or pastry, with much secretion of mucus ; *frequent loose evacuations*. It is especially suited to females with deranged period, and to persons of a mild disposition.

Bryonia.—Pressure or weight, as of a stone, after food ; frequent *bitter or acrid eructations* ; nausea or bilious vomiting ; *stitch-like pain* from the stomach to the blade-bones ; painful soreness at the pit of the stomach on coughing or taking a deep breath ; constipation ; severe headache, worse after movement ; obstinate, irritable disposition.

Lycopodium.—Atonic dyspepsia of weakly patients ; too little nervous force to spare for digestion, so that during its process an irresistible drowsiness comes on, and the sleeper awakes exhausted ; also when from like causes flatulence collects in abundance, and the bowels are utterly torpid.

Antimonium crndum.—Aversion to food ; stomach feels overloaded ; *eructations* ; tasting of the food ; nausea or vomiting of mucus and bile ; alternate diarrhea and constipation ; *tongue coated thickly white*.

Hepar Sulphur.—*Chronic indigestion* ; nearly all kinds of food disagree ; craving for stimulants also when mercury has been too freely prescribed.

Sulphur—Cases of long standing, when only partial relief has followed the use of other remedies. It is particularly required in *strumous* constitutions, and for indigestion associated with or following acute or chronic *eruptions, piles, constipation*, irritability, glandular swellings, affection of the eyes or other scrofulous disorders.

Calcarea carbonica.—Defective digestion and assimilation, with *obstinate acrid eructations* ; relaxed bowels ; sensitiveness to cold and damp ; fatigue after slight exertions ; cough ; gradual emaciation ; and in females, too frequent and profuse menstruation.

Carbo vegetabilis.—Chronic indigestion with *flatulence*, heartburn, headache, debility, etc.

DOSE.—In acute cases give a dessert-spoonful of a solution of ten globules, or one drop of tincture, in three table-spoonfuls of water, every two hours, and less when improving. In the chronic form five globules have to be taken once or twice a day.

DISEASES OF THE EAR.

(Page 622.)

Aconitum is required in commencing treatment, when the affection is attended with considerable febrile disturbance, dry heat of the skin, with fulness and quickness of pulse.

Belladonna.—When there is *determination of blood to the*

head, with redness of the face, by digging, boring, *tearing*, or *shooting pains extending to the throat*; *fever*, and *extreme sensibility to the slightest noise*; when the pains are more severe internally; also when the brain partakes of the inflammation, and delirium is present; also in “*external inflammation of the ears*,” when the inflammation runs high, and threatens to extend to the face and scalp.

Hepar Sulphur.—If Belladonna does not completely reduce the pain and inflammation; or especially in cases in which suppuration and discharge have taken place.

Sulphur.—Should be administered after Hepar Sulphur if the discharge of matter should continue unarrested, and if there are present *humming in the ears* and pricking pains.

Mercurius.—Shooting or tensive pains in the ear, extending to the cheek and teeth; sensation of coldness in the ear; exacerbation of suffering in the warmth of bed; inflammation and induration of the ear, with soreness of the orifice and discharge; swelling of the glands. Also in “*external inflammation*,” particularly when the adjacent glands are involved.

Pulsatilla.—A most valuable remedy in this affection. It is particularly indicated when the external ear is simultaneously much affected and appears inflamed and swollen; attended with heat, shooting and tensive excoriating pain internally; moisture in the ear, or somewhat copious discharge. This remedy is particularly useful for females and individuals of chilly habit.

DOSE.—Of a solution of six globules in two table-spoonfuls of water, give a teaspoonful every two or three hours, until the indicative symptoms subside.

CHRONIC DISEASES OF THE EAR.

(Page 621.)

Lycopus virginicus aurum, Calcareæ carbonica, Nitrate of Amyl by inhalation.

This chronic disease ought always be treated by a physician, as the heart is always too deeply affected. Constitutional treatment is necessary for eradication of the disease.

EPILEPSY.

(Page 624.)

1. *Recent epilepsy.*—**Ignatia, Acidum hydrocyanic, Kali bromatum.**

2. *Chronic.*—**Belladonna, Cuprum, Calcareo carbonica, Sulphur, Kali hydroiodicum.**

3. *From worms.*—**China, Santonin, Filix, Teucrium.**

4. *From onanism, sexual excess.*—**Phosphorus, Acidum phosphoricum, China, Ferrum, Acidum Sulphuricum.**

5. *From fright, and for fits during sleep.*—**Opium.**

LEADING INDICATIONS.

Belladonna.—Sparkling of the eyes, dilated pupils, intolerance of light, flushes of heat in the head, and redness of the face, startings at the least noise, and other symptoms of cerebral congestion. If administered as soon as the indications of an attack are noticed, it may ward it off or mitigate its severity.

Cuprum.—Indicated in preference to *Belladonna* by *paleness* of the face, and by extreme severity of the convulsions.

Nux vomica.—A striking cure in a case of sixteen years' standing is recorded in the *Medical Investigator* for 1870, page 530. An attack was always preceded by constipation, and directly induced by anger, and marked by spasmodic rigidity of all the muscles, throwing back of the head, vertigo and dull pain in the occiput, buzzing in the ears, bloated appearance of the eyes, dryness of the mouth, flatulence, and numbness of the arms and legs. This remedy—twenty drops in half a glass of water, a dessert-spoonful every three hours—was administered in October, 1866, continued for eight days, and although the patient has been angry many times since, there has been no recurrence of the disease.

Chamomilla.—Epilepsy in irritable children; the attacks are often preceded by *colicky pains*, sour vomitings, and *paleness* of one cheek and *redness* of the other.

Kali bromatum.—This remedy is largely prescribed both by homeopathic and allopathic physicians; and certainly, in numerous instances, it tends to diminish the severity of the attacks, and to lessen their frequency. The drug is not suited for attacks of the *petit mal*, and its effects are most striking in recent cases. Its administration may be commenced in ten-grain doses three times a day, and, if necessary, the dose may be subsequently increased. After using this drug for a considerable time, in varying doses, we have not found its beneficial results more marked than those of the commonly-used remedies, especially *Belladonna*, *Opium*, and *Arsenicum*, and as troublesome complications sometimes arise from its use before good effects are obtained, we do not recommend its indiscriminate use.

Kali hydroiodicum.—Dr. T. K. Chambers recommends this

drug as curative in recent cases, and ameliorative in chronic, and gives in his lectures interesting illustrative examples. We have used it with benefit in chronic cases.

Hyoseyamus.—*Bluish color and bloatedness of the face*; foam at the mouth; prominent eyes; convulsive movements of certain limbs or the whole body; renewal of the fits on endeavoring to swallow the least liquid; *cries*; grinding of the teeth; *congestion of the brain*.

Opium.—The attacks come generally at night or in the evening; *throwing back of the head*; unconsciousness; *deep and lethargic sleep*; *threatening suffocation*.

DOSE.—Five globules dry on the tongue, between the teeth or dissolved in a teaspoonful of water, every hour until the immediate symptoms have passed away; then once a day only for four days, waiting four days, and commencing a dose per day again four times, and so on until decided improvement.

ERYSIPELAS.

(Page 638.)

1. *Febrile stage.*—**Aconitum**.
2. *Smooth (non-vesicular) variety.*—**Belladonna, Bryonia, Pulsatilla**.
3. *Vesicular.*—**Rhus tox, Cantharides**.
4. *Additional remedies.*—**Apis** (*puffy swelling*); **Arsenicum, Carbo vegetabilis, Acid nitricum** (*phlegmonous*); **Lachesis, Arsenicum** (*gangrene*); **Sulphur** (*chronic or declining*).

LEADING INDICATIONS.

Aconitum.—General fever, with local inflammation and tenderness. Aconitum is mostly required before the rash appears, but may be given, if indicated, at any stage of the disease, for either *smooth* or *vesicular* erysipelas.

Belladonna.—Cutaneous, bright-red inflammation, swelling, and *non-vesicular* eruption. If there be *excessive* swelling, *Apis* should be preferred. Violent headache, thirst, constipation, and brown-red thick urine, indicate *Belladonna*; also extension of the inflammation towards the brain, with delirium, lethargy, or twitching. It may be alternated with *Aconitum* early in the disease.

Bryonia, instead of *Belladonna* if the joints are specially affected.

Pulsatilla, if the disorder flies quickly from one part to

another ; indigestion after the eruption declines ; the color of the skin is more of a bluish red.

Rhus tox.—*Vesicular* erysipelas, whether on the face or elsewhere, with swelling and shining redness ; great restlessness.

Apis.—Erysipelas with *acute œdema*, without the intense cutaneous inflammation indicating *Belladonna*, or the disposition to form vesicles like *Rhus*.

Cantharis.—Erysipelas with much irritation, burning, vesicles, and serous exudation. Erysipelas from the use of *Arnica*.

Arsenicum.—Erysipelatous inflammation taking on a gangrenous character, when fresh patches appear as others decline ; also when there is excessive general *prostration*.

Lachesis.—When the disease is repeatedly developed in the face, and there is great swelling and tendency to ulceration and gangrene.

DOSE.—Of a solution of fifteen globules, or two drops of the tincture, in four table-spoonfuls of water, give a dessert-spoonful every two hours. If there is an habitual tendency give the remedies once a day, as directed before.

DISEASES OF THE EYE.

(Page 641.)

1. *Catarrhal form.*—**Aconitum, Belladonna, Euphrasia, Mercurius.**

2. *Purulent form.*—**Argentum nitricum, Hepar sulphur, Mercurius, Acidum nitricum, Phosphorus, Sulphur.**

3. *Gonorrheal form.*—**Argentum nitricum, Mercurius, Belladonna, Sulphur.**

LEADING INDICATIONS.

Belladonna.—Pain, redness, and swelling ; *throbbing pains in the temples* ; flushed cheeks, glistening eyes, and great *intolerance of light*. A dozen drops of the tincture may be mixed with half a dozen table-spoonfuls of water, and a spoonful given during the acute stage every hour, and afterwards every three to six hours. *Aconitum* is often required in alternation with *Belladonna* when there are general feverish symptoms ; or two doses of *Aconitum* may precede *Belladonna*.

Aconitum.—Ophthalmia, with *quick pulse*, dry skin, thirst, and when arising from cold. The early administration of this rem-

edy, with the local use of cold compresses, will generally promptly relieve and cure catarrhal ophthalmia.

Mercurius Sol.—Ophthalmia marked at first by a copious discharge of watery fluid, which afterwards changes to *mucus and pus*; agglutination of the lids; smarting heat and pressure, with aggravation of the pains when moving or touching the eyes. There is not much fever present, but considerable itching and irritation.

Euphrasia.—Catarrhal ophthalmia, with *profuse secretion of tears*, sensitiveness to light, and catarrhal inflammation of the frontal sinuses and of the lining of the nose. In simple catarrhal inflammation, *profuse lachrymation* being the chief symptom, it often cures without the aid of any other remedy.

Mercurius corrosions.—In the most violent forms of acute ophthalmia with extreme *dread of light*, or in *chemosis*, the 1x or 2x of this remedy will often cut short the attack.

Argentum nitricum.—This remedy is especially valuable in the *purulent ophthalmia of children*, which it cures rapidly and completely, without the local use of the nitrate. It is also valuable in chronic ophthalmia.

Arsenicum.—Obstinate ophthalmia in *weak*, nervous patients, particularly if the secretion be *acid*, with *burning*, tearing, or stinging pains in the globe and lids, aggravated by light.

Phosphorus.—Chronic and *obstinate* cases which have resisted the usual remedies, with sensitiveness to light, heat and itching of the eyes, *sudden attacks of blindness*, black spots floating before the eyes, and secretion of viscid mucus.

Acidum nitricum.—Purulent ophthalmia; swelling and redness of the mucous membrane and lids; secretion of viscid mucus or pus; burning and smarting in the eyes; photophobia; *nightly agglutination*; and pains in the bones and parts around the eyes. *Acidum nitricum* is required in cases originating in *syphilis*, or aggravated by *mercurial preparations*.

Apis.—When the inflammation is very acute, coming on suddenly, with burning, stinging pains, like a bee-sting, in the parts; profuse flow of tears and swelling of the eyelids and adjacent parts.

Hepar Sulphur, one of the most valuable remedies in chronic cases; the indications are like those for *Belladonna* or *Mercurius* in the acute form; when the inflammation assumes a protracted character, and in those conditions which make a person subject to eye-troubles at the slightest cause.

DOSE.—In *acute* cases dissolve ten globules, or one drop of tincture, in two table-spoonfuls of water, and give a dessert-spoonful every three hours. In *chronic* cases give four globules in a

tea-spoonful of water night and morning until amelioration ; then stop as long as the improvement keeps on.

Arnica should be administered internally simultaneously with its local application, in alternation with *Aconitum*, in cases of *injury to the eye*.

FAINTING—SWOONING.

(Page 647.)

If medical treatment should be required, and the patient should not recover under the means indicated above, select :

Aconitum.—When there is *palpitation of the heart*, with determination of blood to the head, or when the paroxysms come on usually *on assuming the erect posture*, and are accompanied by shivering and flushing of the face, followed by *deadly paleness* ; or after a fright.

China.—After *loss of blood* or other *debilitating causes*.

Nux vomica.—After excessive mental application ; or in habitual drinkers of spirituous liquors ; occurring after a meal, in the morning, or after taking exercise, with nausea and pale face.

DOSE.—Three globules in a teaspoonful of water every four or six hours.

FLOODING—HEMORRHAGE OF THE WOMB.

(Page 650.)

Sabina.—When there are present with the expulsion of *bright-red* blood, dragging and forcing pains, extending down the back and loins, with frequent desire for stool ; diarrhea, chilliness, and heat, with fever.

Secale cornutum.—Incessant expulsive efforts, with profuse discharge of *dark liquid* blood, followed by considerable debility ; great weakness ; small, hardly perceptible pulse ; great fear of death, with tendency to convulsions.

Chamomilla.—When a fit of passion has developed the attack. There are *excessive restlessness*, severe pains in the loins and back, worse at night, like labor-pains ; discharge of *deep-red* or *dark clotted blood* ; frequent yawning ; coldness ; frequent urination.

Ipecacuanha.—The great indication for this remedy is *constant nausea* and a *continuous flow* of bright-red blood.

China.—For restoring the exhausted energies after the discharge of blood.

DOSE.—Dissolve fifteen globules, or two drops of the tincture, in four table-spoonfuls of water, and give a dessert-spoonful every fifteen minutes until amelioration sets in.

The aid of a physician must be obtained as soon as possible.

GALL-STONES.

(Page 650.)

Calcarea carbonica, Chelidonium, China, Chloroform, Lachesis, Nux vomica, Podophyllum, Thuja.

Chelidonium.—Shooting pain from liver into back ; bitter taste, nausea ; constipation or exhausting diarrhea.

China.—Pain in liver or from ulceration ; colic from the gall-stones ; yellow skin ; bitter taste ; abdomen distended.

Nux vomica.—Liver swollen, sensitive, cannot bear clothing tight ; headache, dizziness, gastric symptoms prevailing.

Podophyllum.—Torpid liver, excessive secretion of bile usually, which is now prevented from discharging ; hence jaundice with the gall-stones.

DOSE.—Of a solution of ten globules, or one drop of the tincture, in four table-spoonfuls of water, give a dessert-spoonful every four to six hours.

GONORRHEA.

(Page 654.)

In the treatment of this disease homeopathy offers many advantages ; the medicines are safe, pleasant, and effective, sometimes rapidly so ; by their instrumentality the patient generally steers clear of all or most of the usual consequences, and they do not interfere with the usual comfort, occupation, or health.

LEADING INDICATIONS.

I. Abortive Treatment.—One of the following injections :

- (a) **Tincture hydrastis ; Aquæ**, six ounces. Mix.
- (b) **Argenti nitras**, two grs. ; **Aquæ**, eight ounces. Mix.
- (c) **Zinci sulph.**, eight grs. ; **Aquæ**, eight ounces. Mix.
- (d) **Vini rubri, Aquæ puræ**, of each eight ounces ; **Tannic acid**, 40 grains, M. ft. sol.

II. Inflammatory stage.—**Aconitum, Cann., Cantharides, Mercurius cor., Copaiva, Petroleum** ; also the use of a suspensory bandage.

III. *Gleet*.—**Mercury, Gelsemium, Nux, Sulphur, Agnus castus, Hydrastis, Petroleum, Matico, Stillingia**; also a recourse to the injections, the first named especially being of great value.

IV. *Balanitis*.—**Mercurius sol., Aconitum, Hydrastis.**

V. *Cordee*.—**Aconitum, Cantharides, Gelsemium, Arg. nit., Stillingia.**

VI. *Orchitis*.—**Pulsatilla, Iodine, Aconitum, Gelsemium, Clematis, Mercury, Hammamilis, Phyto.** The testicles should be supported by a suspensory bandage.

VII. *Prostatitis*.—**Belladonna, Atropine, Mercurius iodine.**

VIII. *Rheumatism*.—**Colechicum, Colocyth, Ranunculus bulb., Rhododendron, Rhus, Kali hydriodicum, Sticta.**

IX. *Stricture*.—**Pulsatilla, Eupatorium purp., Agaric, Clematis, Iodine.**

X. *Warts*.—**Thuya, Acidum nitricum.**

XI. *Phimosis*.—**Aconitum, Belladonna, Camu., Gelsemium**; also warm baths, wet compresses, etc.

GOUT.

(Page 660.)

1. *During an attack*: **Colechicum, Aconitum, Kali hydriodicum.**

2. *Between the paroxysms*: **Pulsatilla, Nux vomica, Mercurius jodatus, Bryonia, Rhododendron, Rhus toxicodendron, Arnica, Sulphur.**

LEADING INDICATIONS.

Rhus tox.—When the sheaths of tendons, muscles, etc., are chiefly affected; the pains being worse during rest, at night, in the warmth of the bed, and on *first* moving, but wearing off with continued exercise. Creeping sensations also may be present. In rheumatic lameness generally, *Rhus* is often curative.

Bryonia.—Chiefly when the lower limbs are affected; severe pains down the calf of the leg; shining red swellings, with heat and dryness of the parts; pains aggravated by motion. Indigestion, constipation, etc., are often associated with the disease.

Aconitum is often of service, and sometimes curative. It is more especially adapted to rheumatism of the shoulder, and of the large joints generally, when there is no rigidity. Rheumatism of the heart, with congestion and sense of anguish; and during febrile disturbance.

K. hydriod.—Excruciating pains produced by the least variation or irregularity of motion; inverted hands; swollen, stiffened, almost immovable joints; slightest attempt to rise occasions torture in the lumbar vertebræ; *chronic* induration and enlargement of the glandular structures; affection of periosteum, syphilitic complications.

Rhododendron.—Rheumatic pains worse during rest, in the warmth of bed, and with every unfavorable change of the weather, especially during the prevalence of east winds. It has cured cases in which there were swelling and redness of both the large and small joints, tension, and rigidity.

Pulsatilla.—When the knee, ankle, or instep is affected; and when there are *fugitive* rheumatic pains in various parts of the body; especially in females with scanty period.

Arnica.—Stiffness in the large joints; tearing pains in the small, with pricking; sensations as if the parts were *bruised*; rheumatism associated with a previous injury.

Causticum has been found useful in "rheumatism of the joints with swelling and stiffness, contraction of tendons, shooting and tearing pains, especially in scrofulous patients."

Mercurius.—Puffy swelling of the affected parts; the pains feel as if seated in the bones or joints, and are increased by warmth, and at night; there are also chills, and *profuse perspiration*, which do not give relief.

Sulphur.—Either before or after the above remedies, as an intercurrent, or to complete the cure. It is especially useful in rheumatism from hereditary taint, or associated with eruptions.

Colchicum.—This remedy bears a homeopathic relationship to gout, but should be given in larger doses during the attack; twenty drops of the strong tincture to a tumblerful of water, giving a dessert-spoonful every twenty to sixty minutes, according to the intensity of pain.

DOSE.—Give five globules in a dessert-spoonful of water every two to four hours, *in acute cases*; *in chronic cases*, the same dose once a day.

HAY FEVER.

(Page 674.)

1. *When the chest is chiefly affected.*—**Ipecacuanha, Ac. hydrocy., Kali bichromicum, Ac. carbol.**

2. *When the nose, eyes, and throat.*—**Arsenicum** (*much de-*

bility, with acrid discharge); **Euphrasia** (*profuse lachrymation*); **K. hydriod.**, **Sabadilla**.

3. *Preventives*.—**Arsenicum**, **Iod.**, **Kali bichromicum**.

Sabadilla.—Dr. Bayes recommends one drop two or three times a day in water, and the administration of the drug by olfaction, several times daily; and he adds, "By this means I have cured many severe cases, and made numerous converts to our system."

Liq. potassæ arsenitis is recommended as a *specific*. We have obtained excellent results in many cases from **Ipecacuanha**, **Euphrasia**, **Mercurius**, and **Arsenicum**. In several, the disease has not recurred in several years.

The following medicines are also recommended: **Arsenicum iodatum**, **Arnica triphyllum**, **Euphorbium**, **Hydrocyanic acid**, **Ailanthus**, **Sticta pulmonaria**, and **Grindelia robusta**, according to the personal experience of the patient.

HEADACHE.

(Page 361.)

1. FOR THE ACUTE ATTACKS.—**Nux vomica** (*congestive headache, with giddiness, constipation, etc.*); **Belladonna** (*with flushed face, heat of eyes, which also feel too large*); **Bryonia** (*with vomiting of bitter fluids*); **Veratrum album** (*sick-headache with prostration, cold sweats, etc.*); **Coffea** (*nervous headache, with sleeplessness*); **Cimicifuga** (*nervous, hysterical headache of women, especially at the monthly period, or consequent on its derangement or cessation*); **Aconitum** (*headache from catarrh, with general deranged circulation*); **Iris** (*copious vomiting, the ejected matter containing bile*. See also the section on "Vertigo and Headache.")

2. CHRONIC CASES AND BETWEEN THE ATTACKS.—**Sulphur**, **Sepia**, **Calcarea carbonica**, **Arsenicum**, **Nux vomica**.

SPECIAL INDICATIONS.

• **Nux vomica**.—Pain as from a nail driven into the brain, or stitching pains with nausea and sour vomiting, worse towards morning; excessive sensitiveness of the brain to motion and walking; heaviness of the head *with the sensation as if the skull would split*; contusive pain in the brain; headache every morning on waking, after eating, in the open air, when stooping, or during motion, even when only moving the eyes; pale, worn-out look; constipation, with tendency of blood to the head; irritable, vehement disposition, or lively, sanguine temper.

Belladonna.—Great fulness and violent, aching pains, or pains *as if the head would split, or as if everything would issue through the forehead or one side* of the head; pains over the eyes and nose, or semilateral drawing and stitching pain; undulations in the head as of water. Particularly when the headache is accompanied by *vertigo*, red and bloated face, red eyes; excessive sensitiveness to noise, light, shock, or contact.

Bryonia.—Beating, jerking, or drawing pains; burning pain in the forehead, or heat in the head; headache with vomiting, nausea, and desire to lie down; sets in every day after dinner, or early in the morning on first opening the eyes; aggravation by walking, stooping, or contact; vehement, quarrelsome disposition; frequent chills.

Veratrum.—Maddening, beating pains on each side of the head, with pressure or constriction in the brain; sensation as if the brain were bruised; pains in the stomach; painful rigidity of the nape of the neck; copious discharge of clear urine; nausea, vomiting, etc.; chilliness and cold sweat over the whole body.

Aconitum.—*Violent, stupefying, compressive, or contractive* pain, especially over the root of the nose; *burning pains through the brain*, or drawing pains in one side of the head; headache, with buzzing in the ears and catarrh; moaning, lamenting, dread of death; pale and cold, or *red and bloated face*; strong, full, and quick pulse; aggravation by motion, when talking, raising one's self, and drinking; relief in the open air.

DOSE.—Dissolve one drop or ten globules in six table-spoonfuls of water, and give a dessert-spoonful every one or two hours until improvement begins.

HEART, DISEASES OF.

(Page 686.)

This ought to be treated by a competent physician, as the organic and inflammatory affections of this important organ may easily endanger life if maltreated. The following indications may help the patient to assist during circumstances where prompt attendance is necessary:

Aconitum.—Palpitation from the least excitement, with anxiety, chilliness, numbness of the extremities, or a sensation as if the heart ceased to beat; short, hurried breathing; *hot, flushed face*. It is specially adapted to *plethoric* patients.

Belladonna.—Oppression, tremor, pain about the heart; *throbbing in the neck and head; redness of the face*.

Digitalis.—Great irregularity, without any assignable cause, with inability to walk or lie down; great distress. One to three drops of the strong tincture every two or three hours.

Pulsatilla.—Hysterical symptoms; and in females suffering from deranged period.

Lachesis.—Spasmodic pain in the heart; shortness of breath at every motion; inability to lie down on account of sense of suffocation; patient always worse after sleep.

Spongia.—Violent and rapid action of the heart, with loud blowing sound as of a bellows (on applying the ear to the left chest over the heart).

Spigelia.—Violent and loud palpitation which does not keep time with the pulse; sharp shooting pains through the heart.

DOSE.—Five globules in a teaspoonful of water every one or two hours until the palpitation and anxiety are diminished.

HEARTBURN—WATERBRASH—(*Cardialgia*).

(Page 690.)

As this is only a symptom of derangement of the stomach, the article on “Dyspepsia” may be consulted.

HECTIC FEVER.

(Page 691.)

Hectic fever requires the remedies which correspond to the respective organic affections; treat that, and the fever, a mere symptom, disappears.

HEMORRHAGE. (See Bleeding of the Lungs, Bleeding of the Nose, Bleeding of the Womb, etc.)

HERNIA. (See Rupture.)

HICCUP.

(Page 692.)

Putting the blade of a table-knife on the tongue and leaving it there for several minutes will invariably cure even the worst kind of hiccup.

HIVES. (See Nettle Rash.)

HOOPING-COUGH—CHIN-COUGH.

(Page 694.)

1. *Premonitory febrile symptoms.*—**Aconitum**, **Belladonna**, **K. hydriod.**
2. *Developed hooping-cough.*—**Drosera**, **Coral. rub.**, **Ammon. brom.**
3. *With gastric symptoms.*—**Ipecacuanha**, **Pulsatilla**, **Antimonium**, **Tartaricum**, **Kali bichromicum**.
4. *With convulsions.*—**Cup.**, **Bell.**, **Opi.**, **Ac. hydrocy.**
5. *With lung complications.*—**Aconitum**, **Phosphorus**, **Bryonia**, **Antimonium**, **Tartaricum**.

SPECIAL INDICATIONS.

Aconitum.—Dry, hard, or wheezing cough, with burning pains or tickling in the windpipe, most severe at night, dry heat of the skin, scanty, high-colored urine, general febrile symptoms.

Belladonna.—Sudden, violent cough, *worse at night*, with *sore throat*, determination to the head, effusion of blood in and around the eyes, epistaxis, etc. In the usual course of hooping-cough it may follow *Aconitum*.

Drosera.—Hooping stage, with frequent and excessively severe paroxysms of hoarse, loud cough, sometimes with hemorrhage from the mouth and nose; there may be no fever, or it may be intense, with perspiration, vomiting of food, water, or slimy mucus. *Drosera* is generally efficient in epidemic hooping-cough, except in scrofulous children, who require professional treatment. A dose after every fit of coughing till improvement takes place.

Ipecacuanha.—*Vomiting* of mucus or food and other *gastric* symptoms; sneezing; watery or bloody discharges from the eyes and nose; violent cough which threatens suffocation.

Veratrum.—The mucous rattle begins low down in the chest, with tickling irritation, constriction of the larynx, fever, thirst, extreme *weakness*, *cold perspiration*, bluish face, protruding eyes, anxious expression, involuntary escape of urine or feces during the height of the cough, and vomiting of large quantities of mucus at the end of the paroxysm.

Cuprum.—Violent forms of hooping-cough, causing *convulsions*; the body becomes rigid, the cough suffocating, and the breath nearly suspended during the paroxysms, which occur frequently, and are followed by vomiting, great prostration, and slow restoration.

Opium.—Irregular breathing, constipation, *stupor*; also when

a remedy, well indicated, does not produce the desired results. In the latter case, a few doses will suffice.

Phosphorus.—Hooping-cough complicated with *diseases of the chest*, fever, pain, etc.

Cina.—Hooping-cough with *worm symptoms*—paleness, picking of the nose, itching of the anus, irregular appetite, etc. *Cina* is often useful in alternation with *Bell.*, when there are symptoms of water on the brain.

DOSE.—Dissolve one drop or ten globules in two table-spoonfuls of water, and give a teaspoonful after each severe fit of coughing.

HYDROPHOBIA.

(Page 696.)

PREVENTIVE TREATMENT.

Belladonna.—From the accurate investigation of its specific properties, it has been justly inferred to be equally and powerfully efficacious as a preventive and curative medicine for the treatment of hydrophobia, and the inference has been to some extent borne out by experience. With these precautions, however, the patient may be allowed to pursue his usual occupation, those around him being careful to avoid making any allusion which may tend to remind him of his misfortune.

Lachesis may yet be capable of modifying the violence of the attack, if not of averting its development, if, after the previous employment of the foregoing precautionary measures, some suspicious symptoms occur.

GENERAL TREATMENT OF THE ATTACK.

Lachesis may generally be administered at the commencement of the convulsions.

Belladonna.—If *Lachesis* should have failed to relieve, and when the following symptoms are present: drowsiness, but cannot sleep; sense of dryness and burning in the throat, or *with accumulation of frothy phlegm in the mouth or throat*; frequent desire for drinks, which are immediately pushed aside when presented; or a *suffocating or constricting sensation in the throat at attempting to swallow*; glowing redness and bloated appearance of the face; pupils dilated; desire to strike, spit, or bite; inclination to run away; continual tossing about and twitching, especially in

the muscles of the face; fury, with foaming at the mouth and tetanic convulsions.

Hyoseyamus.—*Convulsions are severe and of long duration*, especially after the distressing act of swallowing has been performed. Other symptoms similar to Belladonna.

Stramonium.—Severe convulsions whenever the eye becomes fixed on brilliant objects or on whatever tends to remind the patient of water; great thirst and dryness with, horror of water and all liquids; fits of laughter and singing; ungovernable fury; insensible and dilated pupils, and great disposition to bite or tear everything with the teeth.

DOSE.—*As a preventive:* Four globules in a teaspoonful of water three times a day for two days, then pause for three days and repeat the remedy for two days, until the healing of the wound is complete, without any unfavorable appearances.

During the attack: Five globules in a teaspoonful of water, or, better, dry on the tongue, every two hours, or at every return of convulsions, until benefit result.

HYPOCHONDRIA, VAPORS, OR LOW SPIRITS— (*Melancholia.*)

(Page 700.)

Arsenicum.—Melancholy, with debility; also for the *burning pains* sometimes complained of.

Ignatia.—Dejection caused by the loss of friends, pecuniary disappointments, or other depressing circumstances.

Pulsatilla.—Patients inclined to weep, and of a quiet and gentle disposition, the reverse of the *Nux vom.* temperament.

Platina.—Where the dejection is caused by derangements of the uterine functions, especially at the change of life.

Nux vom.—Hypochondriasis associated with affections of the liver, irritability, and fractious disposition.

Aurum.—Melancholy, which nothing seems to affect; loathing of life, or a *suicidal tendency*; religious melancholy; uneasiness, apprehensiveness, sullenness, and indisposition to conversation.

HYSTERICIS—HYSTERIA.

(Page 703.)

ERADICATIVE TREATMENT.

Sepia.—In the great majority of cases, especially when the pa-

tient has been affected with any chronic trouble of the womb and its appendages: or again when she is subject to sudden attacks of debility, approaching to general but *temporary* palsy; profuse and often clammy perspiration.

Calcarea carbonica.—In persons of sickly appearance, pale, sunken countenance, with tendency to grow fat, or are subject to fainting fits, or to an habitually impaired and capricious appetite; the menses are too frequent and excessive.

DOSE.—Five globules in a teaspoonful of water every night for a week, awaiting the result for another week, and then proceeding in the same manner until change in the disease manifests itself.

TREATMENT DURING THE ATTACK.

Belladonna.—Rush of blood to the head during spasmodic attacks, with redness of the face and eyes.

Cimicifuga.—Restlessness and sleeplessness; nervous headaches; cessation of the menses.

Iguatia.—Suffocation, with shrieking for help; difficulty in swallowing; emptiness in the pit of the stomach.

Natrum muricaticum.—Delaying menses; somnambulism; a constant desire for salt; *relief from deep respiration*.

Gelsemium.—Epileptiform convulsion, with excessive irritability of body and mind; a semi-stupid condition, with languor and prostration; nervous headache, commencing in the back of the neck and then spreading over the head; vertigo and dimness of vision.

DOSE.—Dissolve ten globules or one drop of tincture in two table-spoonfuls of water, and give a teaspoonful every fifteen minutes, and less often when improvement occurs.

INFLUENZA.

(Page 718.)

1. In uncomplicated cases of influenza.—**Camphora, Aconitum.**
2. With troublesome cough—**Kali bichromicum.**
3. Tedious or imperfect recovery,—**Sulphur, Phosphorus.**

SPECIAL INDICATIONS.

Camphora.—Upon the earliest manifestations of influenza, characterized by *chilliness, shivering*, and general sensation of un-

easiness, this remedy will frequently arrest the further development of the disease.

Aconitum.—When the disorder assumes an inflammatory character, with quickness, hardness, and fulness of pulse, dry hot skin, and short, harsh, shaking cough.

Sulphur.—Dull pricking pains in the chest on taking a deep breath, or after a severe fit of coughing, or when there is oppression at the chest, as if arising from a heavy weight upon it.

Phosphorus.—Exceedingly useful when there is much irritation in the windpipe and its branches, with alteration of voice and pain during articulation.

DOSE.—Of a solution of ten globules or one drop of tincture three table-spoonfuls of water, give a dessert-spoonful every three hours until distinct amelioration or change.

INSANITY.

(Page 722.)

Insanity, comprising melancholia, mania, dementia, idiocy, general paresis, etc., should not properly be made a separate chapter, since only preventive and hygienic treatment can be given. Here we have sectarianism, false education, drunkenness, isolation, reflex insanity from bodily ailment—where are we to stop? The whole *materia medica* must sometimes be studied for the right remedy.

INTERMITTENT FEVER. (See Fever and Ague.)

JAUNDICE.

(Page 725.)

1. *Acute Jaundice.*—**Aconitum, Mercurius, Nux vomica.**
2. *Chronic.*—**Chelidonium, China, Arsenicum, Phosphorus.**

SPECIAL INDICATIONS.

Aconitum.—Jaundice, with symptoms of inflammation and great pain in the region of the liver.

Mercurius.—A valuable remedy, and often effects a speedy cure; it is especially useful after *Aconitum*.

China.—Jaundice from marsh miasmatic influences; with bilious diarrhea; and when the disease is *intermittent*. Persistently used it prevents the recurrence of gall-stones.

Nux vomica.—Jaundice, with costiveness, sensitiveness in the region of the liver, or from sedentary habits, or indulgence in stimulants.

Chelidonium maj.—Jaundice, with pain or tenderness in the liver and right shoulder, deep-red, clean tongue, bitter taste; light-colored, formed, stools, etc.

Phosphorus.—Brownish-yellow skin and conjunctivæ; *frequent*, copious, *whitish-gray* evacuations, blackish-brown urine; dejection and despondency; sometimes loss of voice, cough, and other symptoms of *malignant jaundice*.

Arsenicum.—Malignant cases, with typhoid symptoms, or great *emaciation*. *Ars.* is also useful for the dyspepsia following an acute attack, for jaundice from the free use of *Mercury*, and for obstinate cases from fever and ague.

DOSE.—In *acute* cases, dissolve ten globules or one drop of tincture in four table-spoonfuls of water, and give a dessert-spoonful every three hours.

In chronic affections, give five globules in a table-spoonful of water once or twice a day until improvement begins.

KIDNEYS, DISEASES OF.

(Page 728.)

ACUTE BRIGHT'S DISEASE.

Therebinthina.—Scanty, dark, bloody urine; much hemorrhage; albumen present *when blood is present*; general dropsy; also if the inflammation of the kidneys is caused by a cold.

Cantharides.—Drop-by-drop and painful urinating; burning pain along the urethra and constant urging to pass water; general dropsy.

Hepar sulphuris.—Bright's disease after scarlet fever.

DOSE.—Of a solution of ten globules or one drop of tincture in two table-spoonfuls of water, give a teaspoonful every two hours until amelioration or change.

CHRONIC BRIGHT'S DISEASE

Arsenicum.—Diminished urine with albumen, fibrine casts, and blood corpuscles; post-scarlatinal inflammation of the kidneys; dropsy of the abdomen, chest, and general system; complications with disease of the heart.

Colchicum.—In addition to the usual symptoms of the dis-

ease: *excessive nausea*, with *drum-like* distension of the belly, and painful and scanty emission of bright-red urine.

Opium and Ferrum.—For urenic symptoms.

DOSE.—In chronic cases give the remedies twice or three times a day; but if urgent symptoms require it, treat as in acute diseases.

KING'S EVIL. (See Scrofula.)

LARYNGITIS, OR INFLAMMATION OF THE LARYNX.

(Page 732.)

Chronic Laryngitis.—**Acidum nitricum, Calcarea carbonica, Arsenicum, Kali carbonicum.**

One or more of these remedies may, according to their special indications, act favorably in this affection, the treatment of which should be left to the experienced physician.

For clergyman's sore-throat the best will be two drops of the tincture of Arnica in a teaspoonful of water once or twice a day, and also before delivering a long speech. As soon as improvement is manifest the treatment must be stopped.

LIVER COMPLAINTS.

(Page 733.)

1. *Acute inflammation.*—**Aconitum, Bryonia, Mercur., Hepar sulphur, Phosphor, Nux vomica, Chamomilla.**

2. *Enlargement of the liver.*—**Phosphor., Mercur., Acidum nitricum, Arsenicum, China.**

3. *Heptalgia* (pain in the liver.)—**Aconitum, Bryonia, Mercur.**

SPECIAL INDICATIONS.

Aconitum.—Sudden, *acute* bilious attacks, following chills, with febrile disturbance; threatening jaundice; generally to be alternated with *Merc.*, unless allopathic doses of Mercury have been given, when *China* should be substituted.

Bryonia.—Enlargement and hardness of the liver, with shooting, stinging, or burning pains, increased on pressure, and constipation, without inclination for stool. *Bry.* often acts better in such cases when alternated with *Merc.*

Mercurius.—Dull, pressive pain, which prevents the patient from lying long on the right side; yellow tinge of the "white"

of the eyes; sallow skin; shivering followed by profuse clammy perspiration; loss of appetite; foul taste in the mouth; constipation of the bowels, with white stools; or relaxation, with bilious motions. *Merc.* is one of the best hepatic medicines in simple cases. (See also *Bry.*) But patients who have been dosed largely with *Mercury* should select *Hep. s.*, especially when the stools are *clay-colored*.

Nux vomica.—Liver derangement from the use of intoxicating drinks, excessive or stimulating food, sedentary habits, or nervous exhaustion, with constipation, deep-red urine, etc. Also when associated with piles; in this case, *Sulph.* should be alternated with *Nux v.*

Lycopodium.—Sometimes required instead of, or after, *Nux v.*, when the latter is insufficient; *constipation with flatulence*; continual pain in the right side and back.

Chamomilla.—Bilious attacks in females and children, from exposure to cold, or from anger; nausea or vomiting of bile, yellow-coated tongue, and sometimes bilious diarrhea.

Arsenicum.—Severe and chronic cases, with extreme weakness, burning pain, vomiting, and exhausting diarrhea.

Ac. nit. or Phosphorus.—Long-continued, obstinate cases, with jaundice, more especially if there be reason to fear organic disease of the liver; the former if there be dropsy; the latter if there be fatty degeneration, cirrhosis, etc.

DOSE.—In acute cases: Of a solution of twelve globules or one drop of the tincture in four table-spoonfuls of water, give a teaspoonful every hour or two.

In chronic conditions: A dose once or twice a day.

LOCKED JAW—(*Tetanus*).

(Page 742.)

Idiopathic Tetanus.—**Aconitum** (from exposure), **Chamomilla**, or **China** (if caused by worms).

Traumatic Tetanus.—**Nux vomica**, **Aconitum**, **Arnica**, **Belladonna**.

DOSE.—A few globules should be pressed on the tongue of the patient every three to five minutes.

LOCOMOTOR ATAXIA. (See Paralysis.)

LUMBAGO. (See Rheumatism.)

LUNGS, INFLAMMATION OF—PNEUMONIA—CONGESTION OF THE LUNGS.

(Page 746.)

1. *At the onset.*—**Aconitum** in alternation with Phosphorus. In previously healthy patients, and in uncomplicated cases, these two medicines are generally sufficient.

2. *Pleuritic complication.*—**Bryonia**, in alternation with Phosphorus.

3. *Bronchial complication.*—**Antimonium tart.** alternated with Phosphorus.

SPECIAL INDICATIONS.

Aconitum.—In the early stage of the disease. After two or three doses, its beneficial effects are often marked by perspiration, which contrasts most favorably with the hot, dry skin, urgent thirst, quick pulse, and general suspension of the secretory functions which previously existed.

Bryonia.—This is a remedy of great power in pleurisy (as in all other inflammations of serous membranes), even in its most violent forms. Its special indications are stinging, shooting, or burning *pains* in the side, *aggravated by breathing or movement*; painful, dry cough, or cough with expectoration of glairy sputa; labored, short, anxious, and rapid respirations, performed almost entirely by the abdominal muscles; weariness, disposition to retain the recumbent posture; irritability, restlessness, etc. A dose every one to three hours, alone or in alternation with *Acon.*

Arsenicum.—Tedious cases; when much effusion has taken place, evidenced by painful, *oppressed breathing*, occasional attacks of suffocation, etc.; *coldness of the body, exhaustion.*

Phosphorus.—If the lungs are affected (*pleuro-pneumonia*); also in persons of weakly constitution, sensitive lungs, and predisposition to consumption. The expectoration is *rusty-colored*, and there is much prostration.

Antimonium tart.—Cough, with rattling of mucus, oppressed breathing, sometimes nausea, *profuse expectoration*, violent throbbings of the heart, and *a sense of suffocation.*

Arnica.—Pleurisy supervening upon long-continued and laborious exercise, or from external injury; especially when pain and soreness remain, or when much fluid has been effused; in the latter case, *Arn.* tends to promote its absorption.

Sulphur.—If the well-indicated remedy does not have the desired effect, or in scrofulous patients, a single dose of *Sulphur* will often change the condition favorably.

DOSE.—Dissolve twelve globules or one drop in four tablespoonfuls of water, and give a dessert-spoonful every half hour or hour until relief is manifest; then make intervals of two or three hours.

MALARIAL FEVER. (See Ague.)

MEASLES.

(Page 749.)

1. Primary fever.—**Aconitum.**
2. Eruption slow.—**Bryonia.**
3. During eruption.—**Aconitum, Pulsatilla.**
4. Troublesome cough.—**Kali bichromicum, Belladonna, Tartarus emeticus, Ipecacuanha.**

SPECIAL INDICATIONS.

Aconitum.—Well-marked *febrile symptoms* at the outset, or to control inflammatory action during the progress of the disease. A dose every two, three, or four hours. Dr. Von Grauvogl gives *Acon.* alone in measles, and also to cure the sequelæ, if these arise, as they often do, when the disease has been treated without *Acon.*

Pulsatilla.—Cough worse towards evening or during the night, with rattling of mucus in the air-passages, or thick yellowish or whitish expectoration; thick greenish or yellowish defluction from the nose; bleeding from the nose; catarrhal derangement of the stomach, and diarrhea. *Pulsatilla* may follow or be alternated with *Aconitum*.

Gelsemium.—When the eruption is slow in making its appearance, or is imperfect, or too suddenly recedes, especially when there is a tendency to convulsions, it may be given in frequently repeated doses. Some give it instead of *Pulsatilla*.

Belladonna.—Sore throat, with painful and difficult swallowing; dry, *spasmodic* cough; inflammation of the eyes, restlessness, and tendency to *delirium*.

Ipecacuanha.—Retching, vomiting, and much cough.

Bryonia.—This valuable remedy may be given in the first stage in alternation with *Aconitum*; when the temperature begins to fall, with *Pulsatilla*, and thus the tendency to the development of bronchitis or pneumonia is often averted. *Bryonia* is also

useful, especially when alternated with *Antimonium tart.*, where *cough* is the prominent symptom.

Mercurius.—Glandular swellings in the neck, ulcers in the mouth and throat, bilious diarrhea, dysenteric stools, etc.

Sulphur.—During the decline of the disease, as well as after the eruption has completed its natural course and the other medicines are discontinued, to prevent the usual after-affects. A dose twice or thrice daily for four days; afterwards, once or twice for a like period.

DOSE.—Dissolve ten globules or one drop in three table-spoonfuls of water, and give a teaspoonful every hour in the beginning; but when the eruption is well out, every two or three hours will be sufficient.

MENSTRUATION—MENSES—MONTHLIES.

(Page 733.)

CHLOROSIS, OR GREEN SICKNESS.

Ferrum is indicated after *Calcarea carbonica*, if the latter left a pale and sickly hue of the skin, with ringing in the ears, palpitation of the heart, etc.

Calcarea carbonica.—Even in the worst cases, attended with dropsical swellings of the feet and extreme difficulty of breathing. *Patient feels dizzy while walking upstairs.*

Pulsatilla.—Chlorosis complicated with derangements of the digestive functions; also frequent attacks of semi-lateral headaches, with shooting pains, extending to the head and teeth, *sometimes shifting suddenly to the other side*; palpitation of the heart; *coldness of the hands and feet*, often changing to *sudden heat*; disposition to diarrhea and leucorrhea. *Patient feels better in the open air.*

DOSE.—Five globules in a teaspoonful of water, night and morning, for a week; then pause eight days, after which the course, if necessary, may be repeated again as before.

SUPPRESSION OF THE MENSES (*amenorrhœa*).

Pulsatilla should be employed when a suppression takes place from the sudden effects of a chill, when the symptoms generally correspond with those already described under the head of that remedy in "Chlorosis."

Aconitum.—When the disorder was caused by *fright*, especially in full-habited subjects, or when symptoms of congestion of blood to the head or any other important organ are developed and the pulse is full, hard, and accelerated.

Sulphur.—In cases which assume a chronic and obstinate character; more particularly in feeble, exhausted constitutions, in scrofulous people, and those affected with piles.

Sepia.—Also in chronic and difficult cases with similar symptoms as *Pulsatilla*; also in subjects suffering from hysterical megrim; sallowness of complexion, with yellow-brown spots on the face; frequent attacks of colic and contused or bruised pain in the limbs.

DOSE.—Five globules in a teaspoonful of water, night and morning (as directed in “Chlorosis”).

PAINFUL MENSTRUATION (*dysmenorrhea*).

It will be well to consult, in connection with the remedies, the chapters on “Suppressed” and on “Excessive Menstruation.”

Chamomilla.—Bearing-down or dragging pains, proceeding from the small of the back, with griping in the lower part of the belly, *like labor pains*; also when there is cutting colic, with painful drawing in the thighs and sensitiveness of the abdomen on pressure. The discharge is of a dark color and clotted.

Pulsatilla.—*Retarded menses.* Discharge pale and watery. Bearing down with *pressure* and *urging to urinate*, which is painful; spasms of the stomach and nausea; often vomiting of sour, slimy matter. Patient feels chilly, and the *symptoms are always worse in the evening*.

Belladonna.—For young, robust, and full-habited females, who suffer from severe attacks of colicky pains *before the menses appear*. Dizziness and clondiness of sight. Discharge of bright-red blood, being attended with attacks of *determination of blood to the head*, with sensation of throbbing and heat about the head; face red.

Nux vomica.—Excessive menstruation, with much suffering. Back feels as if bruised; *urging to pass water or stool*, but either without effect or very little is passed at the time. Temper irritable. Morning aggravation especially of a most intense nausea. Also indicated in bilious subjects and those suffering from piles.

DOSE.—A week before the expected return of the menses, give five globules in a teaspoonful of water every night and morning.

During the menstruation, give a teaspoonful of a solution of ten globules in three table-spoonfuls of water every two or four hours.

EXCESSIVE MENSTRUATION (*menorrhagia*).

Ipecacuanha.—Very useful even in the worst cases, particularly when *the blood is flowing without interruption* and there is *continuous nausea* even after vomiting.

China.—Great debility from loss of blood.

Chamomilla.—Blood is dark and clotted, with severe pains like labor.

Sabina.—Excessive discharge of bright blood in full-habited women subject to miscarriage; rheumatic pains in the head and limbs; great weakness; labor-like pains in the loins.

DOSE.—Dissolve twelve globules or one drop of tincture in three tablespoonfuls of water, and give a dessert-spoonful every two to four hours.

MILK ABSCESS. (See Abscess.)

(Page 765.)

Phytolacca decandra, Graphites, Phosphorus, may also prove useful in this affection.

MISCARRIAGE AND ABORTION.

(Page 767.)

1. *Preventive measures:* **Sabina, Secale cornutum, Sepia, Calcarea carbonica, Sulphur.**

2. *For the actual attack:* **Arnica, Sabina, Secale cornutum, Chamomilla, Ipecacuanha, Belladonna, China.**

SPECIAL INDICATIONS.

Secale cornutum.—Especially when the mischief has occurred repeatedly; in weak, exhausted women. There are incessant expulsive efforts, with profuse discharge of dark liquid blood. Patient has fear of death, with tendency to convulsions.

Arnica.—When the symptoms have been excited by an accident, such as a fall, blow, or concussion, etc., this remedy should be immediately administered.

(Consult also the chapter on "Excessive Menstruation.")

DOSE.—To prevent the attack, give five globules in a teaspoonful of water three times a day, and less when the symptoms disappear.

During the attack, give medicine only when the flooding becomes threatening or the pains are too intense. Dissolve twelve globules

or one drop of tincture in three tablespoonfuls of water, and give a teaspoonful every ten to fifteen minutes, and less while improving.

MOUTH, INFLAMMATIONS OF.

(Page 772.)

1. SIMPLE INFLAMMATION.

Kali chloratum.—Fetid breath, great soreness, and ulceration of the mucous surfaces of the tongue, palate, and cheek. This remedy may also be used as a wash for the month (eight grains of the *Chlorate of Potash* to four ounces of water.)

Mercurius.—Abundant *salivation*; swelling of glands.

Acidum nitricum.—When concurrent with portal congestion, and the ordinary symptoms of *biliousness*.

China.—To *invigorate* the patient when the ulcerations are healed.

2. THRUSH.

Borax has a specific power over this affection, and will alone cure it if limited to the month. The month may also be washed with a weak solution of *Borax* (four grains to one ounce of water) in which three or four drops of strong Carbolic acid are mixed, by means of a soft brush. Or *Borax* and *Glycerine* may be used, half a drachm of the former to one ounce of the latter. The infant will swallow sufficient for a dose each time the solution is used.

Mercurius.—Offensive breath, *dribbling saliva*, diarrhea, gangrenous ulcers, etc. If administered when the white specks first appear, it is often alone sufficient.

Arsenicum.—Extension of the eruption to the stomach and bowels; *dark-colored eruption*, having an offensive odor; *exhausting diarrhea*.

Sulphur may follow *Arsenicum* or any other remedy that does no further good; also when thrush has nearly subsided, to prevent a relapse, and when there are eruptions on the skin.

Bryonia or **Nux vomica.**—Gastric derangement, dryness of the month, white or yellow mucus on the tongue.

3. CANKER.

Mercurius (often specific in cases not caused by *Mercury*);
Acidum muriaticum (canker associated with severe disease—

measles, etc.); **Acidum nitricum** (*from excessive doses of Mercury*); **Arsenicum** (*extensive disorganizations, extreme prostration*); **Kali chloratum** (as indicated in simple inflammation).

MUMPS.

(Page 783.)

1. *Swollen glands; difficult mastication.*—**Mercurius corrosivus**, or, in *scrofulous patients*, **Mercurius iodatus flavus**; a dose every six hours is usually sufficient.

2. *Feverish disturbance.*—**Aconitum**, two or three doses sufficient.

3. *Metastasis.*—**Belladonna** (*brain*), **Pulsatilla** (*testicles and mammæ*).

NETTLE-RASH—HIVES.

(Page 790.)

1. *Simple rash.*—**Apis**, **Aconitum**.

2. *From gastric disorder.*—**Antimonium crudum**, **Nux vomica**, **Pulsatilla**.

3. *From cold.*—**Aconitum** (*from draughts and cold winds*); **Dulcamara** (*from damp*).

4. *Associated with other affections.*—**Bryonia**, **Cimicifuga**, **Rhus** (*rheumatic patients*); **Colchicum** (*gouty subjects*); **Arsenicum**, **Ipecacuanha** (*asthma*); **Pulsatilla**.

5. *Chronic cases.*—**Arsenicum**, **China**, **Sulphur** (*intermittent*); **Apis**, **Sulphur**.

6. *Special symptoms.*—**Aconitum** (*febrile disturbance*); **Chloralum hydratum** (*appearing when warm in bed*); **Bryonia** (*sudden retrocession*).

NEURALGIA.

(Page 791.)

1. *Facial neuralgia.*—**Belladonna**, **Arsenicum**, **Aconitum**, **Colocynth**, **Spigelia**, **Phosphorus**.

2. *Hemicrania, or brow-ague.*—**China**, **Nux vomica**, **Belladonna**, **Ignatia**, **Arsenicum**, **Coffea**, **Gelsemium**.

3. *Gastrodynia and enteralgia.*—**Nux vomica**, **Arsenicum**, **Colocynth**.

4. *Neuralgia of the heart.*—**Belladonna**, **Cactus**, **Spigelia**, **Veratrum viride**.

5. *Sciatica.*—**Arsenicum**, **Colocynth**, **Aconitum**, **Rhus tox**.

6. *Pleurodynia*.—**Ran. bulb.**, **Arnica**, **Aconitum**, **Arsenicum**, **Cimicifuga**.

7. *From loss of animal fluids*.—**China**, **Aconitum**, **Phosphorus**, **Phosphoric acid**.

8. *From mechanical injuries*.—**Arnica**, **Aconitum**.

9. *From malaria*.—**China** or **Chininum sulfuricum**.

SPECIAL INDICATIONS.

Arsenicum.—*Burning* or tearing intermittent *pains* having a tendency to *periodicity*; pain aggravated by the continuous application of cold; increased at night or during rest, but lessened during exercise; generally first occurs on the left side, it may be of the face, involving the same side of the head, the eye, and the ear. There are generally associated with this form of neuralgia excessive restlessness, *anguish* and irritability, a *general exhausted or debilitated condition*, *small pulse*, *cold extremities*, etc. Influenza, malaria, overwork, or, more generally, some constitutional debility, may have caused the disease. Pure sciatica. Paroxysms of pain on one side of the head, with coldness or soreness of the scalp; wrenching pains at root of nose, bottom of orbits, in the ear or teeth; viscid sweat; sometimes dizziness, nausea, retching, and even vomiting of bile; rheumatic or arthritic hemicrania; intercostal pain from debility. Constipation does not preclude *Ars*.

Spigelia.—Neuralgic headache and face-ache, especially *when the eye is affected*; radiating in every direction; darting through from front to back; coming and going suddenly, twitching of facial muscles; great difficulty in breathing, palpitation of the heart. Worse in cold, damp weather, and from touch and motion.

Rhus toxicodendron.—*Chronic sciatica*, particularly if associated with rheumatism, stiffness, and lameness; the pains are worse on first moving the affected part, and at night.

Colocynth.—Severe paroxysms of *cutting pains*, chiefly on the left side of the body; the lancinating pains are sudden and violent. Better in perfect rest, from warmth and rubbing. Facial neuralgia, enteralgia, and sciatica, having these symptoms, are curable by this remedy.

Phosphorus.—In neuralgia from debilitated conditions of the nervous system, this remedy is equal or even superior to *Arsenic*, especially when due to mental overwork or if associated with megrim.

Aconitum.—*Facial neuralgia from cold*, anxiety, or night-watching; the pains are severe, recur in paroxysms, are worse at

night; and are accompanied by congestion in the head, lungs, or heart. Recent acute *sciatica*.

Belladonna.—Burning, creeping, cutting, tearing, lancinating, and stinging pains, or throbbing intermittent pains, with one or both *cheeks flushed*, and sometimes swollen; eyes red and watering, pain around the orbit, with twitching of the muscles, sometimes irritation and inflammation of eyeballs; sensitiveness to sight and sound; illusions of sight and noises in the ears; *congestive* (not dyspeptic) *headache*; throbbing pain in the head, sense of undulation in the forehead, frontal headache, worse on stooping; also tearing, boring, lancinating, and jerking pains in the head. *Tic douloureux*; rheumatic neuralgia; ovarian neuralgia, with clawing, griping pain, much thirst, and vomiting; epileptiform neuralgia. Neuralgia of the fifth pair, and hemicrania, are the varieties chiefly curable by *Bell*. In most cases the appearance of the patient strongly contrasts with that described under *Ars.*, the *Bell*. habit being *plethoric*.

Rhododendron chrys.—Neuralgia of the extremities.

Gelsemium.—Of little service in pure neuralgia, but useful in allaying nervous irritation and muscular twitching. Hemicrania with *disordered vision*, dim or double; thirst for light; dizziness; semi-stupor; periodicity. Acute myalgia from long-continued exertion. Not adapted to pleurodynia.

Coffea.—Hemicrania coming on in the morning and lasting all day; increased sensitiveness, wakefulness, and nausea. Neuralgia of lower jaw. Megrin. Mental work excites pain. See also section on "Toothache."

Mercurius.—Neuralgia of face and head; pain proceeding from bottom of the orbit, with sense of coldness round the eye; generally occasioned by *carious teeth*. See also section on "Toothache."

Aurum met.—Neuralgia of the *testes*. Mercurial cachexia, with syphilitic complications. Megrin. Great depression of spirits. *Bone pains*.

Phytolacca.—Prosopalgia and cephalalgia in syphilitic and rheumatic subjects; mercurial and syphilitic toothache; rheumatic neuralgia of back and shoulders; *sciatica*; proctalgia, with pain along the penis.

Ranunculus bulb.—True *intercostal* neuralgia.

Cimicifuga.—Ovarian or uterine neuralgia. Neuralgia of limbs.

Pulsatilla.—Neuralgia of uterus, with bearing-down pain; spasmodic pains in lower part of the abdomen; toothache of preg-

nant women; toothache from cold, with pain over the whole side of head, and especially at the ear.

Hamamelis.—Testicular and ovarian neuralgia; pains shifting suddenly to stomach, causing nausea and faintness.

Veratrum.—Neuralgia of one side of face and head, with sensation of *icy coldness* in the part affected; neuralgia of fifth pair; stabbing pain in the brows; dull aching pains, worse by movement, and atonic contraction of muscles.

DOSE.—Dissolve ten globules or one drop in three tablespoonfuls of water, and give a dessert-spoonful every fifteen minutes to one hour, and less while improving.

NIPPLES; SORE.

(Page 805.)

Arnica.—Internally, and fifteen drops of tincture in two tablespoonfuls of water used externally at the same time, will frequently cure at once if employed at the outset.

Sulphur.—Should be administered when *Arnica* fails to relieve promptly.

Silicea.—May be required in obstinate cases when the foregoing remedies do not suffice.

Mercury.—Will do well when the excoriation is attended with a *burning sensation*.

DOSE.—Five globules in a teaspoonful of water morning and night.

PARALYSIS.

(Page 810.)

1. *Hemiplegia.*—**Nux vomica, Cocculus, Arnica, Aconitum.**

2. *Paraplegia.*—**Cocculus, Phosphorus, Plumbum, Rhus toxicodendron.**

3. *Locomotor ataxia.*—**Phosphorus, Belladonna, Argentum nitricum, Arsenicum.**

4. *Infantile paralysis.*—**Gelsemium, Belladonna, Secale cornutum.**

5. *General paralysis.*—**Phosphorus** (from degeneration); **Baryta carbonica** (of old people); **Mercurius corrosivus, Cocculus, Conium, Belladonna** (after apoplexy); **Plumbum** (with wasting or obstinate constipation); **Argentum nitricum, Gelsemium** (muscular paralysis).

6. *Diphtheritic paralysis.*—**Gelsemium, Conium, Phytolacca.**

SPECIAL INDICATIONS.

Aconitum.—*Recent paralysis*, especially facial, and other local forms of the affection, *consequent on cold*; sensation of numbness in the back, extending to the lower extremities; stinging and pricking in the arms and fingers.

Phosphorus.—Degenerative changes in the brain and spinal cord, following sexual excesses or weakening diseases, with fatty degeneration of the muscles. Particularly if the disease is of *spinal origin*, and accompanied by impotence.

Nux vomica.—Paralysis from spinal disease after the *abuse of alcohol*, with anorexia, constipation, and other conditions indicating this drug.

Plumbum.—General or partial paralysis with excessive *wasting* of the muscular tissues; *obstinate constipation*.

Rhus toxicodendron.—Rheumatic paralysis, from repeated exposures to wet, strains, or excessive exertion, with painful stiffness, tingling, and numbness; pains especially on first movement after rest, and on rising in the morning.

Baryta carbonica.—Incomplete general paralysis of the aged, with loss of memory, trembling; facial paralysis, and paralysis of the tongue.

DOSE.—Five globules in a teaspoonful of water every night and morning for a week; then pause for six days, after which the course may be repeated again, and so on till decided improvement is manifest.

PILES.

(Page 815.)

1. *Ordinary cases*, and from luxurious or sedentary habits.—**Nux vomica, Sulphur, Podophyllum.**

2. *From constipation.*—**Sulphur, Nux vomica, Carbe vegetabilis, Æsculus hippocastanum.**

3. *During pregnancy.*—**Aloes, Collinsonia, Nux vomica.**

4. *Bleeding piles.*—**Hamamelis, Sulphur (dark blood); Æsculus, Aloes, Aconitum (excessive bleeding).**

5. *Blind piles.*—**Nux vomica** (every night, and Sulphur in the morning), **Aconitum** (great pain); **Capsicum** (burning and itching).

SPECIAL INDICATIONS.

Nux vomica.—Piles in patients of *sedentary habits*, or from luxurious living, indulgence in stimulants, or depressing mental

emotions; constipation, with *ineffectual urging*; prolapsus, or loss of power of the muscular structure of the bowels. *Sulph.* may advantageously follow this remedy, a dose being given morning and night for four or five days; or *Sulph.* and *Nux v.* may be given in alternation, the former in the morning and the latter at night.

Hamamelis.—*Bleeding piles*, or only a varicose condition of the hemorrhoidal veins, particularly with a varicose state of the veins of the lower extremities. For cases in which there is considerable loss of blood, it should be used both internally and externally, a *lotion* being made by adding thirty drops of the strong tincture to four ounces of water, and applied by means of two or three folds of linen covered with oiled silk, and renewed several times daily.

Æsculus.—*Bleeding piles*, with much *pain in the rectum*, and also in the *back and loins*.

Collinsonia.—Piles associated with constipation.

Aconitum.—An inflamed condition, with *feverish restlessness*, a sensation of heat, and discharge of mucus or blood. For the *excessive pain* often associated with piles, besides its internal use, *Acon.* may be used as a *lotion*.

Arsenicum.—Burning sensation, and sometimes a feeling compared to passing red-hot needles through the piles, with *intolerable pain* in the back, protrusion of the tumors, and *prostration of strength*.

Sulphur.—This remedy is justly regarded as one of the most valuable in every variety of piles, especially in *chronic* cases, occurring in scrofulous individuals, and associated with *constipation* or thin evacuations mixed with blood.

DOSE.—Five globules in a teaspoonful of water may be given twice a day for the treatment of piles. Painful conditions must be removed by giving a dessert-spoonful of a solution of twelve globules or one drop of tincture in three tablespoonfuls of water every one or two hours.

PLEURISY.

(Page 818.)

For treatment, see Lungs, Inflammation of.

PLEURODYNIA, OR FALSE PLEURISY. (See Neuralgia.)

PNEUMONIA. (See Lungs, Inflammation of.)

POLYDIPSIA. (See Diabetes.)

POLYURIA. (See Diabetes.)

PUERPERAL OR CHILDBED FEVER.

(Page 825.)

1. *Invasive stage*: **Aconitum, Gelsemium.**
2. *Cerebral disturbance*: **Belladonna, Bryonia, Hyoscyamus, Stramonium.**

SPECIAL INDICATIONS.

Aconitum.—Should be employed at first, being indicated by the febrile condition, and will in a great many cases, especially in those of a more simple form, serve to dissipate the entire disordered condition.

Belladonna.—Pains are violent and cramp-like, with swelling of the abdomen; or forcing pains, as if the contents of the abdomen would be pressed out; sensitiveness of the belly to touch; chilliness and heat occurring simultaneously; burning heat, especially of the head and face; redness of the face and eyes; headache; dry mouth, with red tongue; sleeplessness, with restlessness; delirium; suppression of the lochia; the breasts are red and inflamed, or swollen and empty.

Bryonia.—Abdomen swollen and sensitive to touch; violent, splitting headache; the pains are aggravated by the slightest motion. Sitting up, or even raising the head, causes nausea and fainting; great thirst, with desire for cold drinks.

Hyoscyamus.—Similar to belladonna, but where the disease has been developed by mental emotions, and is characterized by spasmodic symptoms, jerks and twitches, delirium, desire to be uncovered, etc.

Mercurius.—Dejected expression of the countenance; great thirst, constant flow of saliva; lacerating, pressing, or boring pains in the belly; profuse sweat, which, however, gives no relief. The symptoms are usually aggravated at night.

Lachesis and **Arsenicum**, as well as **Rhus toxicodendron**, will be of service in severe cases with typhoid character.

DOSE.—Of a solution of twenty globules or two drops in four tablespoonfuls of water, give a teaspoonful every hour or half hour, according to the severity of the symptoms.

PULMONARY CONSUMPTION—(*Phthisis*).

(Page 828.)

1. *Debility*: **Sulphur, Calcareo carbonica, Iodium, Arsenicum, Phosphorus, Ferrum.**

2. *Cough, etc.*: **Phosphorus**, **Belladonna**, **Hyoscyamus** (nightly dry cough); **Bryonia** (stitching pains in the side); **Stannum** (profuse expectoration and night sweats).

4. *Spitting of blood*: **Hamamelis**, **Ipecacuanha**, **Arnica**, **Ledum**, **Millefolium**.

5. *Hectic fever*: **Acidum phosphoricum**, **China**, **Hepar sulphuris**, **Stannum**.

SPECIAL INDICATIONS.

Calcarea carbonica.—*Imperfect digestion and assimilation of food*; obstinate *acid eructations*, relaxed bowels; enlarged glands; sensitiveness to cold and damp; fatigue after slight exertion; cough; *gradual emaciation*; and, in females, too frequent and *profuse menstruation*, or leucorrhea.

Phosphorus.—In confirmed as well as insipient consumption, especially in girls of a delicate constitution; frequent dry, short cough, so constant as to lead to exhaustion of strength; or moist cough with greenish, fetid expectoration from an abscess in the lungs; shortness of breath; tendency to diarrhea or perspiration; emaciation; pain and soreness of the chest; loss of appetite; dry or hot skin; small and quick pulse, etc.

Iodium.—Consumption associated with glandular affections—enlargement or atrophy—diarrhea from *mesenteric disease*, and inability to digest fat; laryngeal or tracheal symptoms.

Ferrum.—*Anemia*, diarrhea, œdema of the lower extremities, emaciation. *Ferr.* is required in most cases for the constitutional condition.

Pulsatilla.—This drug is adapted to that form of indigestion in which *fat*, an important constituent of a mixed diet, is distasteful, and is not taken without more or less derangement of the mucous membranes.

Lycopodium.—Useful if the chest symptoms are associated with *chronic indigestion*—intestinal *flatulence*, constipation, etc.; also in chronic pneumonia.

Hyoscyamus.—Night-cough, especially when the cough commences or is *aggravated on lying down*.

Bryonia.—Tearing, dry cough, as if the chest or the head would burst by the effort; *stitching pains in the side*, catching the breath; dyspnea.

Drosera.—Severe spasmodic cough, causing frequent *discharges of blood*.

Arsenicum.—Tightness of the chest; oppressed breathing, aggravated by lying down; chilliness in the chest, or soreness and

burning from coughing; exhausting diarrhea; *rapid emaciation*; depression of spirits. *Ars.* is valuable in all stages of the disease, and especially in the last.

Hepar sulph.—Scrofulous persons, in the early stage. The chief symptoms are—*hoarse, rough, or weak voice, hollow cough* with expectoration of mucus, sometimes of blood; dyspnea, especially on lying down; night sweats; pain after the smallest quantity of food; clay-colored or greenish stools.

Sulphur.—Valuable for the constitutional condition; also as an *intercurrent remedy* throughout the disease.

DOSE.—Five globules in a teaspoonful of water morning and night.

Aconitum should be given occasionally in dessert-spoonful doses, every hour or two, of a solution of twenty globules or two drops of tincture in four tablespoonfuls of water, during the course of the treatment, when febrile symptoms come up.

PUTRID FEVER. (See Typhus Fever.)

PYROSIS. (See Heartburn—Waterbrash.)

QUINSY—SORE THROAT—(*Tonsillitis*).

(Page 843.)

Aconitum.—Feverishness, headache, dizziness, and restlessness; stinging, pricking, fulness, or even choking, the throat looking as if scorched.

Belladonna.—Bright redness and rawness of the affected parts; flushed face, glistening of the eye, headache, and pain and difficulty in swallowing. *Bell.* may follow, or be alternated with, *Acon.*

Mercurius biniod.—Swollen throat; copious accumulation of saliva; swelling of the gums and of the tongue; shooting pain on swallowing; a disagreeable taste; fetid breath; ulcers on the sides of the mouth; pains from the throat extending to the ear. Profuse perspiration and nightly exacerbations also point to *Merc-biniod*.

Baryta carb.—If given early, before suppuration can supervene, this remedy is said to disperse the engorgement; it is also useful in chronic tonsillitis.

Hepar sulph.—*When matter has formed.* It is especially useful in the scrofulous, in constitutions injured by *mercury*, and when a liability to the disease has become established. In our experience it is more rapidly curative than any other remedy.

Lachesis.—Where the left tonsil is affected, and the mucous membrane of a livid color.

Arsenicum.—Severe attacks, with much general *prostration*, the tonsils becoming putrid or gangrenous.

Calcaria, Phosphorus, and Iodum are also useful remedies.

Nux vomica or **Pulsatilla**, when *gastric* derangements cause, or are associated with, quinsy.

DOSE.—In acute cases give a dessert-spoonful of a solution of twelve globules or one drop of tincture in four tablespoonfuls of water every hour; in subacute, every three or four hours; in chronic enlargement of the tonsils, a dose of five globules in a teaspoonful of water every night.

QUOTIDIAN AGUE. (See Ague.)

RABIES. (See Hydrophobia.)

REMITTENT FEVER—BILIOUS FEVER.

(Page 845.)

The first and most immediate object of treatment is to reduce the force and frequency of arterial action during the paroxysm (Aitken). This, to the homeopath, is equal to prescribing *Aconitum*; and though that remedy has no specific relation to the blood-poison itself, it is capable of effecting “the first and most immediate object of treatment.”

EPITOME OF TREATMENT.

1. *Precursory stage*: **Gelsemium, Camphor** (chills).
2. *Hot stage*: **Aconitum** and **Belladonna**.
3. *Advanced stage*: **Ipecacuanha** (gastric disturbance); **Baptisia** or **Arsenicum** (typhoid condition); **Hyosciamus** or **Belladonna** (delirium); **Coffea** (sleeplessness); **Opium** or **Rhus** (coma, or stupor); **Phosphorus** (jaundice); **Arsenicum, Arg. nit.,** or **Veratrum** (excessive vomiting or black vomit, etc.).
4. *During the remission*: **Quinine.**
5. *Preventive*: **Gelsemium.**

DOSE.—Dissolve ten globules or one drop of tincture in three tablespoonfuls of water, and give a teaspoonful every two hours during the *remission*, when this is well marked; otherwise every six hours, and less often when improvement begins.

RHEUMATISM AND RHEUMATIC GOUT.

(Page 849.)

1. To *cut short an attack*, give **Aconitum** at once, two drops of the tincture, or twenty globules, in four tablespoonfuls of water. Of this give a tablespoonful every hour. Keep patient in bed, well covered, for two hours after he commences to perspire; then dry him well and give him dry, warm clothing.

2. For *acute rheumatism*: **Aconitum, Bryonia, Belladonna.**

3. *Complications*: **Cimicifuga, Cactus, Spigelia, Digitalis**, or **Arsenicum** (for the heart); **Colchicum, Colocynth, Ranunculus bulb., Rhod., Rhus**, or **K. hydriod.** (for the joints); **Ac. nit.** (hippuric perspiration).

4. *Subacute attacks*: **Rhus, Cimicifuga, K. hydriod.**

5. *Prophylactic means*: **Sulphur, Aconitum, or Dulcamara** (immediately after exposure to wet, etc.).

6. *Rheumatic gout*: **Colchicum, Pulsatilla, Colocynth, Ruta.**

Aconitum.—Acute rheumatism, especially at the commencement, *when the fever is high*, and there are violent shooting or tearing pains, worse at night, and aggravated by touch. Also swelling and redness of the affected parts, impaired appetite, high-colored urine, etc. *Acon.* may be administered either alone or in alternation with *Bry.*, at intervals of one to three hours; or the latter may be administered in the daytime, and the former at night. Administered very early, *Acon.* is often sufficient to cure rheumatism without the aid of any other remedy. It should be given in a low dilution.

Bryonia.—Lancinating or stitching pains, affecting the muscles rather than the bones, worse on *the least movement*, but relieved by rest; also febrile heat, gastric derangement, profuse perspiration, or coldness and shivering, and irascibility. *Cardiac, lung,* or *pleuritic complications* are but extensions of the rheumatic disease, and are not, therefore, necessarily indications for any change from *Bry.* or *Acon.* But it is sometimes necessary to change the remedy to *Rhus* if the tendons become implicated, or to *Cactus* or *Spig.* if the heart is specially involved.

Belladonna.—Frequent doses at night for *sleeplessness*.

Sulphur.—After the acute symptoms have subsided, to complete the cure and prevent obstinate sequelæ; when the constitutional predisposition is strongly marked; and as an intercurrent

remedy. It is especially useful when the pains are drawing and tearing, *worse when cold*, and *better when warm*.

Cimicifuga.—An excellent remedy in most cases, particularly if the sciatic nerve is at all affected.

Phytolacca.—Excruciating pains suggesting renal inflammation.

Ant. tart.—Acute pain on movement, inducing nausea, cold perspirations, and occasional cramps.

Rhus tox.—Lumbago from getting wet; increase of pains during repose, at night, on *first* moving the affected part, or on first getting up in the morning; rigidity; chronic lumbago.

Arnica.—Lumbago, implicating muscles that have formerly been injured, as by over-lifting, a sprain, or a blow.

DOSE.—For *acute* rheumatism, use a solution of twelve globules or one drop of tincture in four tablespoonfuls of water, and give a dessert-spoonful every one or two hours.

In *chronic* affections, give five globules morning and night.

RICKETS.

(Page 855.)

Treatment for this disease must be radical, and if commenced early the best results may be expected; for although one of the most common of children's diseases, it is yet one most easily arrested.

Phosphoric acid —Rickety affections of the bones, with pains in the limbs, diarrhea, and other symptoms of *hectic*.

Silicea.—Corrects the *perspiration about the head* and upper portion of the chest, and the sensitiveness before described; it also controls the tendency to the increased growth of cartilage.

Calcareo phos.—In many cases of rickets this salt is of great utility, and if the child is fed by the breast, both the mother and child will be benefited by the medicine. Phosphate of lime has the power not merely to correct deficient consolidation of the bone, but equally to correct the unnatural growth and malnutrition of the soft tissues of the body.

Asafoetida, Phosphorus, and Sulphur are also recommended.

DOSE.—The remedy must be given for some time, five globules in a teaspoonful of water every night for six days; then stop for six days, and commence giving the medicine again, and so on until a change begins.

RINGWORMS—FAVUS—(*Tinea Capitis*). Plate XIII.

(Page 857)

Treatment for this disease requires to be *constitutional*, and the best remedies will be **Rhus toxicodendron**, **Sulphur**, **Staphysagria**, **Arsenicum**. Besides these the following medicines may prove useful: **Hepar sulphur**, **Dulcamara**, **Bryonia**, **Graphites**.

DOSE.—Give five globules once a day.

ROSE COLD. (See Hay Fever.)

RUPTURE, OR HERNIA. (See page 427.)

SALT RHEUM. (See Tetter.)

ST. VITUS'S DANCE, OR CHOREA.

(Page 861.)

1. If the disease has been caused by *fright*, give **Aconitum** or **Ignatia**.

2. From *worms*: **Cina**, **Mercurius**, **Ignatia**, **Spigelia**.

3. From *scrofula*: **Iodium**, **Arsenicum**, **Ferrum**, **Sulphur**.

4. From *rheumatism*: **Cimicifuga**, **Spigella**.

5. *If the cause is not traceable*: **Cuprum**, **Belladonna**, **Agaricus**, **Stramonium**, **Zincum**, **Arsenicum**, are recommended; the last remedy is often curative, especially in uncomplicated cases.

DOSE.—Five globules in a teaspoonful of water must be given twice daily, and less often when improvement shows itself.

SCARLATINA, OR SCARLET FEVER.

(Page 863.)

1. Simple scarlatina will generally yield to the employment of **Belladonna** during the course of the affection, preceded by a few doses of **Aconitum**, to moderate febrile excitement, and **Sulphur** during its decline.

2. *Scarlatina anginosa*: **Aconitum** and **Belladonna**; **Gelsemium**, **Apis** (great swelling of the throat); **Ammonium carbonicum**, **Mercurius biniod.** (ulceration); **Acidum nitricum** (internally or as a gargle, or both); **Hyosciamus** (great restless-

ness, screaming, convulsions); **Stramonium** (delirium); **Opium** (coma).

3. *Scarlatina maligna*: **Ailanthus gland.**, **Acidum carbol.**, **Arsenicum**, **Acidum muriaticum**, **Cup. acet.**, **Acidum nitricum**, **Hydrastis** (as a gargle, eight drops to half a tumbler of water, or the strong tincture as a paint to the tonsils). The spray of Sulphurous Acid, or of Perfumed Carbolic Acid, diluted—one part of either to about ten of water—is also recommended.

4. *Secondary diseases (sequelæ)*: **Acidum muriaticum**, **Apis.**, **Mercurius iodat.**, **Phosphorus**, **Sulphur**, etc.

SPECIAL INDICATIONS.

Belladonna.—Bright red, clear, and uniformly developed rash, difficult swallowing, inflamed throat and eyes, dilated pupils, sleeplessness, with nervous excitement, starts, etc. **Belladonna** exerts a direct power over scarlet fever, which in the modified variety, and when the eruption is *scarlet*, will generally yield to its action without the aid of any other remedy.

Aconitum.—Acute febrile symptoms. If given early, **Aconitum** may modify and abridge the accompanying fever.

Mercurius.—Inflamed, swollen, or ulcerated throat; salivation; ulcers in the mouth; acrid discharge from the nostrils.

Apis.—Rapid swelling of the throat, and sharp stinging pains.

Veratrum vir.—In *scarlatina simplex* and *anginosa* this remedy greatly modifies arterial excitement, heat of skin, vomiting, and concomitant symptoms during the early stage, and should be given in two-drop doses, 1x; for adults, the strong tincture may be used.

Hydrastis.—Putrid ulcerations of the mucous surfaces. For malignant sore-throats it is invaluable.

Coffea.—Extreme restlessness, sleeplessness, irritability, and a whining disposition, particularly at night.

Gelsemium.—This remedy diminishes cerebral congestion and nervous excitement, moderates the pulse, and has great power in developing the eruption when it is imperfect. It is also recommended when the symptoms are of a *remittent* character.

Ailanthus gland.—Malignant scarlatina, especially where there is a fetid discharge from the nostril accompanied by cracking at the angles of the mouth, etc. Although we have used it on several occasions with good results, our experience is too limited to enable us to add anything of a positive character on the point; but it is strongly recommended both on theoretical and clinical

grounds. It is important that the remedy be administered early, in a strong form, and frequently repeated till amendment sets in.

Ammon. carb.—Enlarged and livid tonsils, which are covered with a rapidly degenerating, sticky, offensive mucous slime; burning pains in the throat; also a tendency to an accumulation of mucus in the mouth; faintly developed eruption; heaviness of the head; drowsiness, and not easily aroused attention (*Pope*).

Lachesis.—In malignant scarlatina, during the decline of the eruption, a typhoid condition often supervenes, probably from the absorption of the ichorous discharge from the throat. This condition is characterized by prostration, quick feeble pulse, low muttering delirium, and jactitation. In this stage *Lachesis* is an invaluable remedy, especially when the patient is worse in the afternoon, and after awaking from sleep.

Sulphur should be given during the decline of the eruption, as a preventive of *sequelæ*.

Arsenicum.—If dropsical symptoms or kidney affections appear; also if there be rapid prostration or emaciation.

DOSE.—Of a solution of ten globules or one drop of tincture in three tablespoonfuls of water, give a teaspoonful every two or three hours.

SCIATICA.

(Page 868.)

For treatment, see Neuralgia; also Rheumatism.

SCROFULA.

(Page 869.)

A dose of one of the following medicines may be given once or twice daily, as exerting a favorable influence over the debilitated state of the system. As it is often desirable to persevere with one remedy for a long period, it is necessary occasionally to suspend its use for a few days, then to administer a dose or two of an intercurrent medicine, such as **Sulphur**; and again, after waiting a few days, to resume the former remedy. The most useful remedies are—**Calcareæ carbonica**, **Sulphur**, **Iodium**, **Ferrum**, **Phosphorus**, **Arsenicum**, and **Mercurius**.

Calcareæ—is well adapted to those constitutions in which the digestion and assimilation of food does not lead to the formation of good blood and healthy tissues; there is an *impoverished*, or,

on the other hand, a *stout, soft, and pale appearance*, notwithstanding that a sufficient supply of good food is taken. It is indicated in the cases of *enlarged and hard abdomen*, so frequently met with in children with a tuberculous tendency. Other indications for this remedy are—a want of firmness of the bones, slow or difficult dentition, scrofulous swellings, extreme sensitiveness to cold and damp, and, in females, too frequent and profuse period.

Sulphur.—Unhealthy skin; scrofulous ophthalmia of children; humid eruptions behind, or purulent discharge from the ears; swelling of the axillary glands, tonsils, nose, or upper lip; swelling of the knee, hip, or other joints; defective nutrition; colicky pains, mucous discharges, etc.

Phosphorus.—Frequently and easily disordered lungs, with a short, dry cough, pain or soreness of the chest, shortness of breath, *tendency to diarrhea or perspiration*, and general feebleness of constitution.

Arsenicum.—This is one of the most important remedial agents in scrofula, when debility is very marked, and the patient has frequent and exhausting discharges from the bowels, sallow complexion, and emaciation.

Mercurius iodatus and **Silicea** are suitable adjuncts in many cases.

Ferrum iodatum—is of great value in the *anemic*, impoverished, and cachectic conditions so common in scrofula and tuberculosis, arising from imperfect assimilation of food.

Aurum.—Chiefly indicated in *affections of the bones*, and in cases improperly dosed with *Mercury*. *Ferrum* and *China* are deserving of attention in like cases.

Belladonna.—When sensitive organs are affected, such as the eye, the ear, and the throat, with heat, redness, and pain in the eye, and great intolerance of light; *neuralgic pains*; sore throat, rendering swallowing difficult; *painful swelling* of the parotid and other glands, etc.

Silicea.—Scrofulous ulcers with callous edges, fistulous ulcers, *scald head, otorrhea*; scrofulous affections of the bones. It may follow *Cule.*, especially in diseases of the bones.

Mercurius.—Glandular inflammations with much swelling, redness, and the pains worse at night in bed, particularly when the glands of the neck are swollen and painful, and there are strumous affections of the eyes; copious saliva; disagreeable taste, and frequent and unhealthy-looking stools.

Sepia.—Females, with *menstrual irregularities*, corrosive *leucorrhea*, indurations of the uterus, unclear skin, etc.

Iodine.—Enlargement of the glands; scrofulous inflammation of the knee; rough, dry skin; enlarged mesenteric glands, and tender abdomen; emaciated appearance, with hectic fever. A chronic diarrhea, premonitory of consumption of the bowels, is well met by this remedy.

Kali carbonicum, Hepar sulphuris, Phytolacca, and **Staphysagria** may also be required in the treatment.

DOSE.—As in all chronic conditions, give five globules every morning and night for six days, then stop for a week, repeat the dose again for six days, and so on till improvement sets in.

SCURVY.

The treatment for this disease is hygienic. (See page 873.)

SEA SICKNESS. (See page 880.)

SHINGLES—(*Herpes Zoster*).

(Page 890.)

1. *Earliest symptoms:* **Aconitum** (with neuralgia consequent on anxiety, etc.).

2. *Developed herpes:* **Rhus** (in all simple cases); **Sulphur** (to follow *Rhus* if necessary); **Arsenicum** (neuralgia, and in debilitated constitutions); **Phytolacca, Graphites** (ulcerous conditions, and in old persons); **Phosphorus** (consumptive patients); **Tellur., Phosphorus, Sepia** (*herpes circinnatus*).

3. *Pleurodynia:* **Ranunculus bulb.**

4. *Additional remedies:* **Manganese, Staphysagria, Cistus, Natrum muriaticum.**

DOSE.—Dissolve twenty globules or two drops in four table-spoonfuls of water, and give a dessert-spoonful every two or three hours.

SHIP FEVER. (See Typhoid Fever.)

SLEEPLESSNESS—INSOMNIA—WAKEFULNESS.

(Page 895.)

In this disorder the use of the commonly applied *narcotics* is generally doing more harm than good, as they act only temporarily

as palliatives, making the trouble worse in their after-effects. The following remedies *produce sleeplessness* in the healthy, and will therefore cure it in homeopathic doses.

Coffea.—Mental fret and friction; patient “cannot sleep for thinking;” excitation of all the organic functions; agreeable excitement; playfulness; wakefulness of children and old persons.

Chamomilla.—Peevish excitement of children; nervousness; palpitation from anger, vexation, or the use of coffee.

Nux vomica.—After errors in diet or excesses in alcoholic drinks; on immoderate strain of the nervous system by haste and worry of business, or late hours of study.

Belladonna.—Great desire but inability to sleep; fear; frightful vision; heat and throbbing in the head; puerperal sleeplessness.

Gelsemium, Ignatia, Pulsatilla, may in some cases be required.

DOSE.—Five globules in a teaspoonful of water should be taken in the morning and three hours after dinner, but *not* before going to sleep.

SMALL-POX—(*Variola*)—VARIOLOID. (Plate IX.)

(Page 898.)

1. *Primary fever*: **Aconitum, Belladonna.**
2. *Eruptive stage*: **Antimonium tartaricum, Thuja.**
3. *Suppurative stage*: **Antimonium tartaricum, Mercurius, Apis, Lachesis.**
4. *Retrocession of the eruption*: **Camphor, Sulphur.**
5. *Confluent and malignant cases*: **Sulphur, Arsenicum, Phosphorus.**
6. *Complications*: **Phosphorus, Antimonium tartaricum** (pneumonia); **Aconitum, Bryonia** (congestion of the lungs); **Bryonia, Kali bich., Antimonium tartaricum** (bronchitis); **Rhus** (severe pain in the back); **Mercurius** (glandular swellings); **Apis, Belladonna** (dropsical swellings, closed eyes, swollen throat); **Belladonna, Hyosциamus, Stramonium** (delirium). **Arsenicum, Baptisia** (sudden prostration and threatened syncope).
7. *To prevent pitting*: Pricking the pustules on the face with a needle after dipping it in carbolic acid.
8. *Desquamation*.—**Sulphur**, with cleanliness and frequent tepid sponging.
9. *Sequelæ*: **Sulphur, Mercurius corrosivus** (ophthalmia);

Hepar sulphur, Phosphorus, Sulphur (boils). See also under "Complications," above.

Preventives.—**Vaccination, Sulphur, Vaccinine, Antimonium tartaricum, Thuja.**

SPECIAL INDICATIONS.

Aconitum.—Shivering, heat, dryness of the skin, rapid pulse, swimming and pain in the head, nausea and vomiting, and pain in the back and loins; it may be used at any time during the course of the disease, when febrile symptoms are prominent. If there be much sickness with the fever, and a very rapid pulse, **Veratrum viride** may be substituted for *Acon.*

Antimonium tartaricum—is specific for small-pox, and should be administered as soon as the nature of the disease is ascertained; it is specially valuable during the eruptive stage, and also in the primary fever if nausea and vomiting or convulsions should occur. Indeed, during nearly the whole course of the disease it may be given alone or in alternation with any other remedy that is indicated. In favorable cases, if *Acon.* be given for the primary fever, and *Sulph.* during desquamation, to prevent after-effects *Ant. tart.* is the only remedy required.

Belladonna.—Severe head symptoms, delirium, intolerance of light, etc.; a few doses will usually afford relief.

Mercurius.—Salivation, ulcerated throat, fetid breath, or bloody diarrhea, especially during suppuration.

Apis.—Excessive swelling of the face, eyelids, etc.

Coffea.—Two or three doses, if there be restlessness and sleeplessness.

Camphor.—If the eruption suddenly disappears, or suddenly becomes malignant, with difficulty in breathing, coldness of the skin, and symptoms of paralysis of the brain, two or three drops in a little tepid water every ten or fifteen minutes for several times, till the skin becomes warm and the eruption reappears.

Opium.—Drowsiness or stupor and labored breathing.

Lachesis.—During the recent epidemic this medicine was found invaluable in those cases in which a typhoid condition ensued during the stage of maturation (probably due to absorption of pus).

Sulphur.—When the disease pursues an irregular course; when the eruption exhibits a tendency to disappear from the surface; when the pustules, instead of being transparent or yellow, are green, purple, or black; when the blood with which they are filled announces a decomposition of this fluid. When there is furious

itching, and when the disease is on the decline, it should be given as a preventive to sequelæ, and continued till recovery is complete.

Carbo vegetabilis, Acidum nitricum, or Arsenicum under similar conditions, or when *Sulphur* only partially succeeds.

DOSE.—Dissolve twenty globules or two drops in four table-spoonfuls of water, and give a dessert-spoonful every two to four hours, according to the severity of symptoms.

SORES, OR ULCERS. (See Ulcers.)

SPASMS, OR CONVULSIONS. (See Convulsions.)

SPERMATORRHEA.

(Page 882.)

Treatment of this disease should be left to the experienced physician, but the patient may derive benefit by using one of the following remedies :

Agnus castus, China, Phosphorus, Platina, Phosphoric acid, Gelsemium, Staphysagria, Nux vomica, Sulphur.

The treatment must be directed to the entire constitutional condition of the patient, and hygienic measures are of the greatest importance in this affection.

SPINAL MENINGITIS. (See Spotted or Cerebro-Spinal Fever.)

SPINE, DISEASES OF.

(Page 907.)

Treatment for this trouble must be constitutional as well as local, and be regulated by the nature, cause, and extent of the deformity.

Remedies which may be employed in affections of the spine are —**Calcarca carbonica** and **phosphorica, Acidum phosphoricum, Silicea, Pulsatilla, Sulphur**, etc.

DOSE.—Five globules in a teaspoonful of water once a day, with intervals of a week after having used it for the same time, and so on repeatedly.

SPITTING OF BLOOD.

(Page 913.)

Pulsatilla, Cocculus, Sepia, Sulphur. One or more of the last three remedies will sometimes be required, successively, after the previous employment of *Pulsatilla*, when this remedy is insufficient to restore the regularity of the periodical discharges, and the spitting of blood is associated with suppression of the menses.

Arnica is principally useful in cases arising from external injury.

Aconitum.—Accelerated pulse, palpitation of the heart, a feeling of ebullition of blood in the chest, great anguish and anxiety. When the expectoration is profuse, coming on in gushes.

Ipecacuanha.—When a taste of blood remains in the month, with constant nausea, frequent cough, weakness, and expectoration streaked with blood.

China.—One of our best remedies in restoring the vital energies of the patient, after considerable loss of fluid; it is therefore particularly efficacious *after* a severe attack of this affection. But it is also useful *during* its course, when the spitting of blood takes place after a violent cough; when there is shivering alternately with excess of heat; frequent and short perspiration; feeling of lightness of the head; weakness.

For the after-treatment use: **Phosphorus, Sulphur, Sepia, China.**

DOSE.—Against an actual discharge of blood give the remedy every three hours, and immediately after each discharge, in doses of a teaspoonful of a solution of twelve globules or one drop of tincture in three tablespoonfuls of water.

If using it after the attack is passed, as a restorative medicine, give five globules in a little water three times daily.

SPOTTED FEVER—CEREBRO-SPINAL FEVER—
CEREBRO-SPINAL MENINGITIS.

(Page 917.)

This sometimes very rapidly fatal disease has been treated homoeopathically with very favorable results.

Aconitum, Gelsemium, Veratrum viride, are remedies that will be found most useful, especially at the commencement of the disease.

Belladonna and **Hyoseyamus** may be more particularly relied on when the cerebral symptoms predominate.

Bryonia and **Rhus toxicodendron** should be resorted to when the high inflammatory condition seems to give way to one of a typhoid character.

Arsenicum, **Opium**, **Cuprum**, should be administered in the advanced stages of the disease.

DOSE.—Dissolve one drop of tincture or ten globules in three tablespoonfuls of water, and give a teaspoonful every one or two hours.

SPRAINS—STRAINS.

(Page 918.)

The immediate treatment consists in the application of hot water, as hot as can be borne, until the pain is considerably modified, followed by a compress of cloths moistened with a lotion of *Aconitum*, *Arnica*, *Rhus*, *Put*, or *Hyper.*, and covered with oil-silk. The remedy used for the lotion may be also taken internally.

Aconitum, in alternation with **Rhus**, may be administered, when the joint becomes swollen and painful; and when constitutional disturbance attends the injury.

When the pain and swelling subside, good strapping is better than the compress, as it supports the muscles during exercise, and does away with the necessity for prolonged rest. Care, however, should be observed for several weeks, to avoid a relapse, in which case the cure becomes difficult and tedious, especially if the patient has a rheumatic tendency.

STOMACH, INFLAMMATION OF.

(Page 923.)

Aconitum is usually sufficient in simple inflammation from cold.

Arsenicum.—Burning, agonizing distress; unquenchable thirst; wiry, quick pulse.

Antimonium crudum.—Thickly-coated tongue, nausea, wind from the stomach, with the taste of food.

Mercury, **Bryonia**, **Phosphorus**, or **Arsenicum** in chronic cases.

For *Ulcer in the Stomach*: **Arsenicum**, **Kali bichromicum**, **Kreosotum**, **Hydrastis**, are recommended.

STONE AND GRAVEL.

(Page 926.)

These need to be treated surgically.

STRICTURE OF THE URETHRA.

(Page 930.)

This must be treated surgically.

STYE—(*Hordeolum*).

(Page 934.)

Pulsatilla.—This is the principal remedy, and should be the first administered, alone, or in alternation with *Acon*. If given very early, *Puls.* often disperses the stye; one or two drops may also be applied locally.

Aconitum.—Inflammation, pain, and restlessness.

Sulphur.—A dose morning and night, for a few days, to prevent a recurrence of styes.

Calcareas and Sulphur.—Are chiefly valuable in frequently-recurring styes, and especially in patients of a scrofulous constitution. They should be administered for a week each in succession, as follows: *Calc.*, morning and night, for a week; then, after waiting two or three days, *Sulph.*, in the same manner repeating the course as often as necessary.

DOSE.—Five globules, or one drop of the tincture, should be given three times daily until improvement is manifest.

SUNSTROKE.

(Page 934.)

If there are *no convulsions*, the patient should be quickly stripped, placed in an empty bath, and suffused over the neck and shoulders till the temperature is reduced below 102°. *Camphor* should be inhaled, and given on sugar. A teaspoonful of brandy and water (half of each) may be given instead. When the danger is over *Aconitum* may be given every ten minutes. If there are convulsions, the patient should be placed in a tepid bath, and cold water added till the temperature of the body is reduced to 98°.

Camphor and *Aconitum* may be given as in the other case. *Belladonna* is to be preferred to *Aconitum* if the eyes be staring and glistening.

Glonoine.—Very severe, heavy, and throbbing pain in the head, particularly at the back; or sudden loss of consciousness.

Belladonna.—Violent dizziness, or sudden falling down as if from apoplexy; redness of the face.

Camphor.—Great depression of the pulse, and pale face, with violent distress in the head; followed immediately by a reaction—flushed face, accelerated pulse, etc.

The *effects* may usually be met by *Belladonna*, *Hyosciamus*, or *Glonoine*.

DOSE.—Dissolve ten globules, or one drop of tincture in three tablespoonfuls of water, and give a teaspoonful every ten or fifteen minutes.

SPYIILIS.

(Page 939.)

1. *Primary.*—**Mercurius, Acidum nitri, Thuja, Arsenicum-jodatum, Sulphur.**

2. *Secondary.*—**Acidum nitricum, Kali-jodatum, Mercurius, Aurum.**

3. *Tertiary.*—**Kali-jod, Aurum, Phosphorus, Arsenicum.**

The layman should never undertake the treatment of this formidable affection from false shame, but should at once consult an experienced physician.

TEETHING, DISORDERS DURING.

(Page 947.)

1. *Feverishness, etc.*—**Aconitum, Chamomilla** (*fretfulness; e cheek pale, the other flushed*).

2. *Diarrhea.*—**Chamomilla**, *sudden starts; pinching pains; slimy or yellow, sour-smelling, offensive motions*); **Mercurius** (*green or bloody*); **Colocynth** (*Colic*); **Podophyll.** (*paroxysms of pain, with prolapsis ani*); **Belladonna** (*nervous irritability, flushed cheeks*); **Calcaria carbonica**, or **Sulphur** (*scrofulous children*); **Arsenicum** (*with emaciation*).

3. *Constipation.*—**Bryonia, Nux vomica, Sulphur, Aconitum, Plumbum.**

4. *Sleeplessness, etc.*—**Coffea** (*nervous excitability*); **Bella-**

donna (*flushed face*); **Gelsemium** (*simple wakefulness*) **Krcosotum** (*agitation*).

5. *Convulsions*.—**Belladonna**, **Chamomilla**, etc. See Section 83.

6. *Irregular dentition*.—**Calcarea carbonica** (*too early or too late*); **Calc. phos.**, **Phosphorus** (*excessive weakness; rachitic constitution; see also Section 69*); **Silicea** (*perspirations about the head*); **Krcosotum** (*thin, irritable children; early dental decay*). Also the use of lime-water.

DOSE.—One drop of tincture or ten globules should be dissolved in three tablespoonfuls of water. Of this solution the child should receive a half teaspoonful every two or three hours; at the same time the mother or nurse should take a teaspoonful, if the child gets the breast.

Mothers and nurses should avoid all irritating food and drink during the nursing period.

TETTER—SALT RHEUM.

(Pages 627 and 824.)

Mercurius, **Iodium**, **Sulphur**, **Lycopodium**, **Kali-jodatum**, **Petroleum** (in obstinate cases, scaly patches with deep fissures).

Arsenicum.—In chronic and inveterate cases, this is an excellent remedy and may be given for two or three months.

TOOTHACHE.

(Page 953.)

In this most troublesome and painful affection the well-selected homeopathic remedy sometimes will do wonders, relieve the pain instantly, and by taking the medicine at long intervals cure the condition entirely and preserve the teeth, which so often undeservedly fall a sacrifice to the dentist.

1. From *cold or chill*: **Anconitum**, **Belladonna**, **Chamomilla**, **Dulcamara**, **Mercurius**, **Glonoine**.

2. From *decayed teeth*: **Krcosotum**, **Staphysagria**, **Belladonna**, **Mercurius**, **Silicea**, **Antimonium crudum**, **Phosphorus**, **Nux vomica**, **Aconitum**, **Mercurius**.

3. From *indigestion*: **Bryonia**, **Nux vomica**, **Pulsatilla**, **Mercurius**.

4. *Nervous*: **Belladonna, Chamomilla, Nux vomica, Coffea, Ignatia, Arsenicum.**

5. *Rheumatic*: **Chamomilla, Mercurius, Cimicifuga, Bryonia.**

6. *In children*: **Aconitum, Chamomilla, Belladonna, Silicea.**

7. *In pregnancy*: **Belladonna, Nux vomica, Coffea, Chamomilla, Sepia, Kreosotum.**

SPECIAL INDICATIONS.

Chamomilla.—Toothache from a draught, or *suppressed perspiration*, and affecting the ear; the teeth feel long and loose; the cheeks and gums are swollen, but the skin is not very red; and the pains are aggravated by eating or drinking, especially by warm drinks. It is suited to *children during teething*, with watery, greenish, fetid diarrhea.

Belladonna.—Shooting, throbbing pains, affecting several teeth on one side, so that it is impossible to point out the exact tooth; the pains shift about, and are increased by contact of the teeth or by warm or cold applications; determination of blood to the head, *flushed face*, excessive *sensitiveness to external impressions*, swelling of the cheek or glands, dryness of the mouth and throat, inflammation of the dental pulp.

Mercurius.—*Decayed* teeth; violent scraping or lacerating pain in the cheek-bones, or pains aggravated by eating or drinking, and also at night in bed; pains affecting the entire side of the face—extending to the temples, glands, and ears; Toothache with *salivation* (not caused by *Mercury*); *profuse perspirations* in bed, which do not afford relief.

Glonoine.—Pulsation in the teeth, with *headache*; toothache after being overheated and taking cold.

Arsenicum.—Unbearable, jerking pains, coming on or aggravated at night. This remedy may be continued for some time after the cessation of pain, to prevent a recurrence.

Arnica.—Pain consequent on extraction or other dental operations; the mouth should be rinsed with a mixture of one part of the strong tincture to about ten of water.

Hepar sulphur.—Decay of teeth, and easily-bleeding gums, from *Mercury*. *Carbo Veg.* and *Ac.-Nit.* are also useful in similar conditions.

Aconitum.—Acute, stinging pain, or hard-aching, relieved temporarily by cold water; there is throbbing, heat of the face, and sometimes chilliness, but not the mental confusion and sensitive-

ness to noise, light, etc., which indicate *Bell*. A drop or two of the strong tincture or of the first dilution, applied to the tooth by means of a piece of lint, will sometimes promptly relieve this kind of toothache.

DOSE.—One drop of tincture, or six globules, dissolved in water, every fifteen or twenty minutes till the pain is mitigated; afterwards every four or six hours.

The *Sulphurous Acid Spray*, or a plug of lint dipped in the acid and inserted in the tooth, will often give immediate relief.

The local application of the *galvanic current* often affords speedy relief. A mild current for two or three minutes generally suffices.

TYPHOID FEVER.

(Page 989.)

1. *Invasive stage*: **Baptisia**.
2. *Great prostration*: **Arsenicum, Acidum muriaticum**.
3. *Excessive Diarrhea*: **Arsenicum, Veratum album** (*involuntary*), **Ipecac., Carbo vegetabilis**.
4. *Hemorrhage from the bowels*: **Tereb., Acidum nitricum, Ipecacuanha**.
5. *Complications*: **Phosphorus, Belladonna, Opium**, etc. See Sequelæ.
6. *Debility following*: **Acidum phosphoric, Ignatia, Ferrum, Sulphur, China, Nux vomica**.

SPECIAL INDICATIONS.

Baptisia.—As soon as typhoid fever is suspected, this remedy should be administered, one or two drops of 1x dil., or of the strong tincture, every two or three hours. This remedy is of great value, modifying, and even cutting short the attack by destroying the poison in the blood. Its influence in this disease is comparable to that of *Acon*. in simple fever; but *Aconitum* exercises little or no curative power in typhoid fever, which depends on the presence of a specific blood-poison, and requires the action of an antidote. Should, however, the administration of *Baptisia* have been much delayed, and the specific poisonous effects produced, other remedies must be resorted to; especially *Arsenicum* and *Rhus*.

Arsenicum.—Frequent, copious *diarrhea*, which may become *involuntary*, of drab or ochre-colored evacuations; enlargement, sensitiveness, and gurgling of the abdomen; excessive *prostration*; *thirst*; nearly imperceptible, intermittent pulse. This remedy is

of priceless value, and its administration should be persevered with even in the most disheartening cases. It may be alternated with

Carbo veg.—Offensive smells from the patient, *fetid* evacuations; also cold extremities, cold sweats, and rapid sinking.

For further indications see "Typhus."

TYPHUS FEVER.

(Page 989.)

1. *Febrile symptoms.*—**Aconitum, Bryonia, Gelsemium.**
2. *Cerebral symptoms.*—**Hyosciamus, Belladonna, Veratrum-viride, Stramonium, Tereb. (from Uremia).**
3. *Sleeplessness.*—**Coffea, Belladonna, Gelsemium.**
4. *Stupor.*—**Opium, Rhns.**
5. *Extreme prostration.*—**Acidum muriaticum, Ars., Ac-phos.**
6. *Pulmonary complications.*—**Phos., Bry., Acon. (congestion).**
7. *Putrescence.*—**Carbo V., Ars., Rhns, Bapt.**
8. *Convalescence.*—**Ac-Phos., Ac-Nit., China, Sulph.**

SPECIAL INDICATIONS.

Aconitum.—Thickly-furred tongue, foul taste, thirst; heavy, aching pain in the head; soreness and heaviness in the bowels and other parts of the body; exacerbations towards evening; the urine becomes dark and foul; the patient is restless, depressed in spirits, wakeful or drowsy, and dreams heavily during sleep. *Acon.* is of great service in the first stage, before the brain is much involved, and when severe febrile disturbance is present, but not afterwards, probably, as an intercurrent remedy for inflammation or local congestion.

Gelsemium.—Is specifically indicated when, from some great excitement or over-exertion, a typhoid state suddenly supervenes, with prostration of all the vital forces, and the patient experiences strange sensations in the head, with morbid condition of the motor nerves, manifested by local paralysis, or jactitation of certain muscles (*Hale*).

Baptisia.—Should typhoid symptoms appear, and there be difficulty in determining the exact nature of the disease, this remedy should be at once administered, and repeated several times. If improvement does not follow in a reasonable time, another remedy should be chosen.

Hyoscyamus.—*Severe pains in the head*; dull, distressed, or haggard expression of the face; dry and glazed brown tongue; sordes on the teeth, noises in the ears, deafness, and *aberration of sight*—the patient seeing double or treble; delirium, in which the patient frequently manifests a *desire to escape* from some imaginary enemy or evil. *Hyos.* is probably one of the best remedies in this disease.

Belladonna.—Great *cerebral congestion*,—bright-red, even bloated, face; *throbbing* of the temples and carotids; glistening and staring of the eyes; partial loss of the use of the tongue, so that the patient can scarcely articulate; much *thirst*; confusion of ideas; picking at the bed-clothes; furious *delirium*.

Opium.—*Labored breathing*; low muttering delirium; stupor; dark-red face; hot and dry, or clammy, skin; thick brownish-coated tongue; complaint of thirst (if the patient can express his sensations).

Ac.-Muriat.—In an advanced stage this acid is sometimes capable of effecting a most beneficial influence; especially when there are,—complete loss of muscular power; extreme dryness and parched appearance of the skin, which is cold; quick, feeble pulse; low delirium; slaving; foul exhalations from the ulcerated throat; etc.

Rhus Tox.—Blackish-brown mucus on the tongue; thirst; bleeding from the nose; discharge of fetid urine; involuntary, bad-smelling alvine evacuations; small and rapid pulse; stupor.

Arsenicum.—Sunken countenance and eyes; dry, cracked tongue; burning thirst; involuntary diarrhea. *Acidum nitri*, or *Acidum phosphori*. have often a very salutary effect, and may be given occasionally throughout the disease.

DOSE.—As in all acute diseases, give a teaspoonful every hour or two of a solution of twelve globules, or one drop in three tablespoonfuls of water.

ULCER.

(Page 997.)

Strictly *constitutional* treatment is generally necessary. This may be illustrated by the fact that the appearance presented by a sore often furnishes an excellent test of a patient's health: a weak or indolent ulcer rapidly assumes a healthy aspect on any improvement of the constitutional powers of the patient; on the other hand, a healthy sore immediately becomes indolent, or sloughs, when any extreme depressing cause comes into operation.

Belladonna.—*Painful* ulcer, with surrounding redness.

Silicea².—Simple ulcer, and in *chronic* cases.

Kali bich.—Ulcer on the leg, deep, with hard base and overhanging edges. This remedy may also be used externally (one grain to six ounces of water).

Hydrastis Canadensis.—Unhealthy ulcers; ulcerations of mucous surfaces—the mouth, throat, nose, eyes, etc. It should be administered internally and applied locally as a gargle or wash, as the case may require.

Arsenicum.—Inflamed ulcers with *burning pain*, raw surface, or presenting a livid appearance, and easily discharging blood or thin fetid matter, and often with general indifferent health. This remedy is specially valuable in *indolent ulcers of the legs*, and should also be used in the form of a lotion.

Rhus, ext. and int.; *Polygonum* and *Ammon.-Mur.* have cured superficial ulcers and sores on the lower extremities.

Hep.-S., **Calc.-C.**, or **Sulph.**—For *constitutional* ulcers, and to improve the health.

DOSE.—Dissolve ten globules or one drop in three tablespoonfuls of water, and give a dessert-spoonful every four hours.

URINE, INCONTINENCE OF.

(Page 1002.)

The chief remedies are—Bell., Gels. (*in the aged*); Canth. Nux, V., Ac.-Phos. (*with alkaline urine, and in hysterical females*); Podoph., Calc.-C., Ac.-Nit., Opi., Lyc., Ac.-Benz. (*high-colored and strong-smelling urine*); Cin. or Spig. (*from worms*); Fer., Sil. (*diurnal*); Acon., Canth., or Cham. (*in children, with uneasiness in micturating*).

Gelsemium.—Relaxed or paralytic condition of the sphincter of the bladder, leading to involuntary urination night and day.

DOSE.—Give five globules, or one drop of the tincture, in a teaspoonful of water, morning and night.

URINE, RETENTION OF.

(Page 1004.)

Aconitum.—*Inflammatory symptoms*, often in alternation with some other remedy, especially *Cantharis*.

Camphor.—*Spasm* at the neck of the bladder, especially if

caused by *Cantharides* (a drop on a piece of loaf-sugar every fifteen minutes for three or four times.)

Cantharis.—Urging to urinate; cutting and tearing pains.

Clematis.—Difficult passage of urine; heat or slight burning, with occasional stitches in the course of the urethra while passing water; stricture of the urethra after repeated attacks of gonorrhea, and in cases temporarily relieved by the introduction of bougies.

Nux vomica.—Painful, ineffectual efforts to urinate, caused by the use of wines or spirits; *spasmodic stricture*.

Sulphur.—In alternation with the last remedy, if the patient be troubled with piles.

Cann., Tereb., Phos.-Ac., Bell., Iod., Ars., Chim., are additional remedies often required.

DOSE.—Dissolve ten globules or one drop of tincture in three tablespoonfuls of water, and give a teaspoonful every ten to fifteen minutes until the difficulty has been relieved. Afterwards continue the remedy for a few days every two or three hours until permanently relieved.

VOMITING OF BLOOD.

(Page 1024.)

Aconitum.—Hemorrhage with flushed face, palpitation and anguish; also for the premonitory symptoms—shiverings, quick pulse, etc.

Hamamelis.—*Venous* hemorrhage, from any organ; also when the *state of the vessels* leads to the hemorrhage rather than any change in the normal blood constituents. We have so often used this remedy successfully that we now employ it more frequently than any other for hemorrhage.

Ipecacuanha.—*Bright-red* blood, with paleness of the face; *nausea*; frequent, short cough; salt taste, blood-streaked expectoration. Often useful after, or in alternation with, *Acon*.

China.—*Debility* consequent on hemorrhage,—feeble pulse, cold hands or feet, fainting, etc.

Arsenicum.—*Difficult breathing*, extreme palpitation, anguish, *burning heat*, thirst, small and quick pulse, etc.

Ferrum.—Spitting or coughing up of blood, with palpitation, *faintness*, etc.

Arnica.—Hemorrhage from an *accident*, or severe exertion.

DOSE.—Of a solution of ten globules or one drop in three tablespoonfuls of water, give a teaspoonful every hour and after each spell of vomiting.

VOMITING.

(Page 1025.)

Should vomiting arise from over-repletion, or from indigestible food, it may be regarded as a conservative effort, and should be encouraged, within proper limits, by drinking warm water, or tickling the throat with a feather until the offending material is expelled. If sympathetic of organic disease, the treatment should be directed to the primary cause, while temporary relief from the vomiting may be obtained by the use of one of the following remedies. Under other circumstances, a remedy may be selected according to the causes of the vomiting, and the symptoms which exist.

Ipecacuanha.—*Simple, copious vomiting*, with nausea; greenish or blackish and mucous vomit; diarrhea.

Kreosotum.—Chronic, *persistent* vomiting. When the affection does not depend on simple indigestion, *Kreos.* is the best remedy; also for *persistent retching*, without vomiting.

Secale.—Chronic vomiting of sour mucus, with offensive eructations.

Arsenicum.—Vomiting, purging, great *prostration*, with a *burning sensation* in the stomach and throat, and cold hands and feet. When caused by cancer or other malignant disease of the stomach, this remedy often relieves.

Zincum.—The food is *suddenly ejected*, without retching; and the patient becomes emaciated.

Ant.-Crud.—Nausea, heaviness of the stomach, foul, white tongue, and dislike to food, which continue unabated after free vomiting.

DOSE.—Dissolve ten globules or one drop of tincture in three tablespoonfuls of water, and give the patient a teaspoonful every hour or two, and after each spell of vomiting.

WHITES OR LEUCORRHEA.

(Page 1074.)

The radical cure of this disorder is very difficult and can only be effected by long, careful, and patient treatment.

Pulsatilla.—Discharge is thick, like cream, or milky, and sometimes gives rise to a burning sensation; menses irregular and scanty.

Calcarea.—The discharge is similar as in the former, but the menses are profuse and too often. Inclination to be fat.

Sepia.—In delicate, exhausted females, the discharge is green or yellow, generally watery, and acrid. There are often pains of a bearing-down character.

Mercurius, Sulphur, China, Kreosotum, Iodium, and others, will often be of service.

DOSE.—Four globules in a teaspoonful of water morning and night for a week, with a week's interruption, repeating this administration until improvement has been obtained.

WHITLOW.

(Page 1032.)

As soon as the first indications of whitlow are noticed, the finger should be repeatedly plunged into kerosene or into water as hot as can be borne, in which common salt has been dissolved, for two hours or longer; the hand should be held in a raised posture, and a dose of *Silicea* taken every three hours. Thus its formation may often be prevented. If these means be commenced too late, a warm bread-and-milk poultice should be applied, and *Silicea* continued every four hours, in alternation with *Aconitum* when there is much feverishness, or *Belladonna* when the inflammation is erysipelatous. *Mercurius* and *Hepar-Sulphur* are also good remedies.

WORMS.

(Page 1078.)

1. *As Vermifuges.*—**Cin., Cnp.-Ac., Filix mas., Tenc., Urt.-U.; Sant., Kousoo.** Infusion of Pomegranate bark.

2. *For constitutional conditions commonly associated with worms.*—**Ars., Cal.-C., Sulph., Sil., Merc.**

3. *Occasional Remedies.*—**Acon.,** (*feverishness and restlessness*); **Bell.** (*flushed face, nervous irritability, convulsions*); **Nux V., China, Puls.** (*Indigestion*); **Ign.** (*nervous depression*).

LEADING INDICATIONS.

China.—A valuable remedy for the condition which favors the development of *thread-worms*, or round-worms, or even tape-worms, with the following symptoms:—boring at the nose, livid semicircles under the eyes, tossing about, or calling out suddenly during the sleep, epilepsy or convulsions, nausea and vomiting,

gripping, itching at the nose and anus, and white, thick urine, sometimes passed involuntarily.

Santonine.—Is confessedly a genuine specific for all the larger kinds of parasites.

Mercurius cor.—This remedy is indicated more by the character of the evacuations than by the presence of parasites. The motions are whitish or greenish, pappy, and sometimes bloody, often attended by tenesmus; there may be also distension of the abdomen, *fetid breath*, *excessive quantity of saliva*, difficult teething, restlessness at night, etc.

Ignatia.—Suitable for mild, sensitive children, troubled with excessive *itching of the anus*, *prolapsus ani*, nervousness, depression, epileptiform attacks. etc.

Teucrium.—Thread-worms, with much irritation in the rectum, irritability of the nervous system, sleeplessness, vertigo, etc. It is especially efficacious in *adults*.

Filix mas.—This remedy is chiefly employed against *tape-worm*, and if continued for some time, twice a day, often effects a cure.

The direct expulsion of a tape-worm ought to be introduced by large doses of vermifuges, which act as a poison to the worm. The after-treatment and that against the common worm-affections is very successfully conducted homeopathically.

DOSE.—Five globules, or one drop of the tincture, of the selected remedy in a teaspoonful of water three times daily.

WRITER'S CRAMP.

(Page 1085.)

Stannum, **Secale cornutum**, **Nux vomica**, are recommended; also the use of light and large penholders.

YELLOW FEVER.

(Page 1091.)

1. *First stage.*—**Camph.** (*chills and shivering*); **Acon.** and **Bell.** alt. every hour (*intense fever and pain in the head*); **Gels.** and **Bry.**, alt. unless the fever be much reduced in twenty-four hours; **Cimic.** (*rheumatic pains in back, limbs, and head*); **Ipec.**

(*nausea or vomiting*); **Ant.-T.**, should *Ipec.* prove insufficient; **China** (*prostration after hemorrhage*).

3. *Second stage*.—**Ars.** and **Merc.**, alt. two hours; **Coff.** (*nervous and restless at night*); **China**.

3. *Third stage*.—**Ars.** and **Crotalus** (alt. two hours, *interposing only such remedies as are called for by urgent symptoms*).

4. *Preventives*.—**Acon.**, **Cimic.**, **Bapt.**, **Crude Charcoal**, hot baths.

NOTE.—The absence of folios following this page is accounted for by the fact that the paging of the Homeopathic Matter and Plates were omitted in their consecutive order.

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